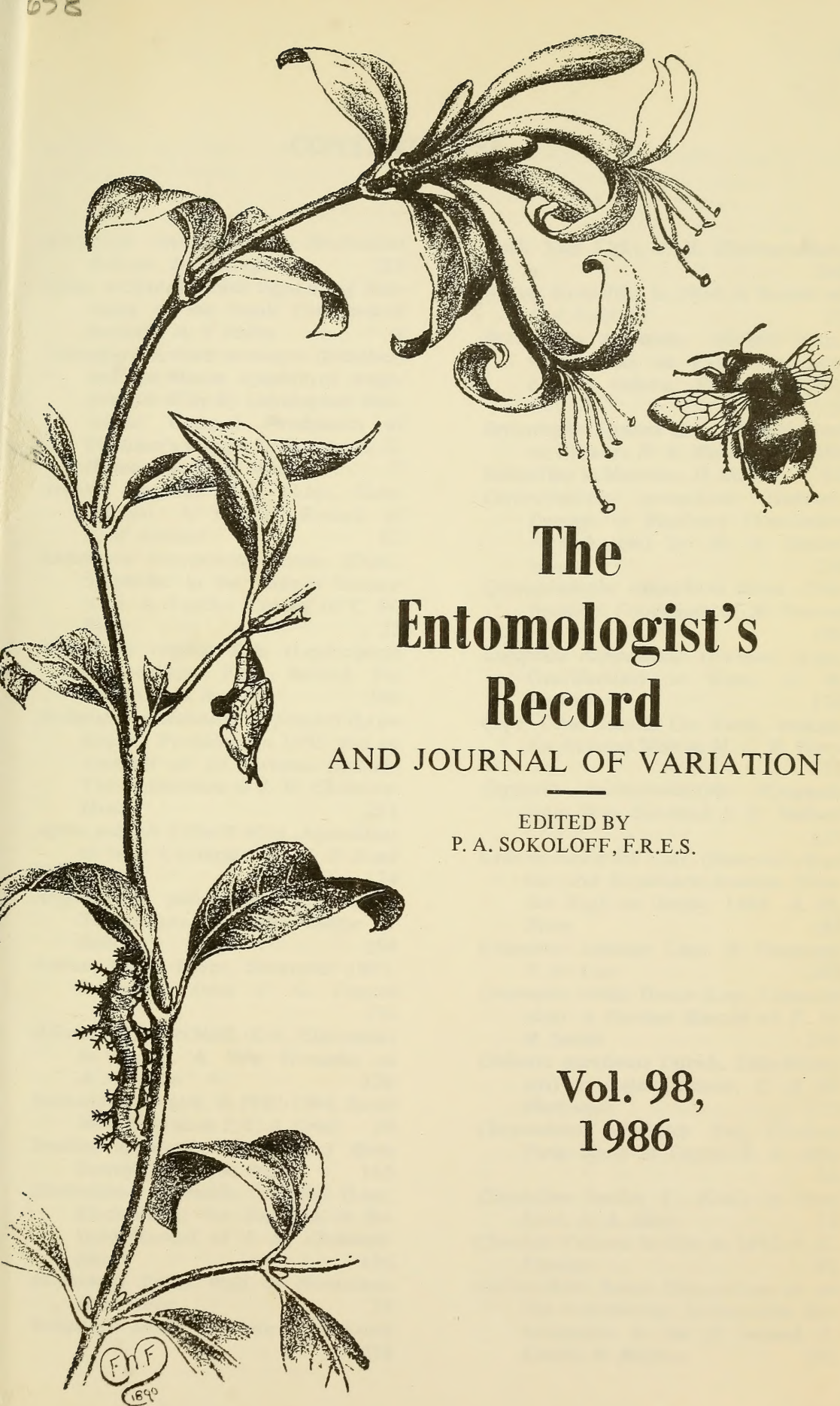


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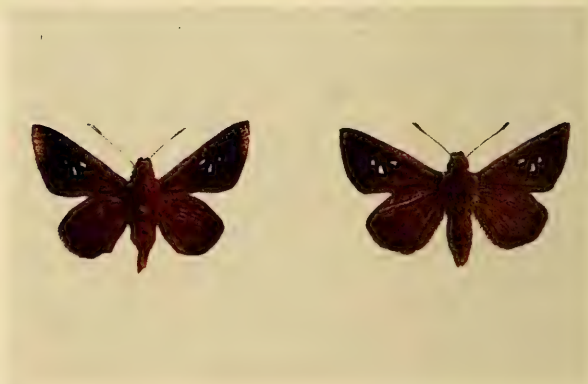
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Photo: C.G.C.D.

MYLOTHRIS CHLORIS AGATHINA (CRAMER)
(LEPIDOPTERA: PIERIDAE),
A SPECIES WHICH HAS EXTENDED ITS RANGE
OF DISTRIBUTION FROM THE EASTERLY PART
OF SOUTH AFRICA TO THE EXTREME
WESTERN CAPE

By A. J. M. CLAASSENS PhD., M.Sc. * and C. G. C. DICKSON M.Sc. **

Mylothris chloris agathina (Dotted Border) has been known to migrate to some extent and has previously been recorded from Aberdeen (Mr. and Mrs. Wykeham); from Port Elizabeth; and in 1965 from Knysna, where C. G. C. D. found it not uncommonly, despite no sightings known previously, to us, from there. Since 1976 A. J. M. C. found it to be plentiful at Plettenberg Bay, Sedgefield, the Wilderness and George, and he found it later in Swellendam, where its presence was confirmed by R. J. Southey, on 11th March, 1981. But up till fairly recently it was only firmly established well to the east of Port Elizabeth. Trimen, in *S. A. Butt.* III: 32 (1889), mentions it as becoming numerous "about King William's Town". It has always been common at East Londen.

Agathina's great trek to the extreme west seems to have started in about 1980; although the initial movement from well within the Eastern Cape itself evidently preceded, considerably, the final migration. B. van der Riet states in *Metamorphosis* No. 6, April, 1984, that he noticed the butterfly at Hermanus and Onrust Rivier in the early 1980's. Dr. J. Ball observed a specimen in good condition at Somerset West on 1st March, 1981. In the following year he caught two examples in his garden at Pinelands, on 6th and 14th March. Far more northerly records of his, for mid-April, 1983, have been, from: Clanwilliam, the Pakhuis Pass, Wupperthal, Grey's Pass and Citrusdal. Claassens found a flourishing colony at Greyton in early 1981; and where the species still occurred in January, 1982. He recorded it also from Hermanus in January, 1982, from Ceres in late May, 1982, from Onrust Rivier in December, 1982 and from

*203 High Level Road, Sea Point, Cape, South Africa.

** "Blencathra", Cambridge Avenue, Cape Town, South Africa.

Legend to plate I

Mylothris chloris agathina (Cramer). Fig. 1. larvae, final instar, on *Colpoen compressum* Berg. (X0.5); Fig. 2. pupae (x0.9); Fig. 3. male, under-side (x0.9); Fig 4. male and female uppersides (x0.4) *Zophopetes dysmephila* (Trimen). Fig. 5. eggs on palm leaf; Fig. 6. final instar larva on palm leaf (x0.85); Fig. 7. exposed pupae (x1.1) : Fig. 8. male and female uppersides (x0.59). (The recorded degree of reduction or enlargement is approximate. Caption to plate should read "Photo : A. J. M. C.").

Mossel Bay in early July, 1984. Other lepidopterists have sighted the butterfly in the following places:—

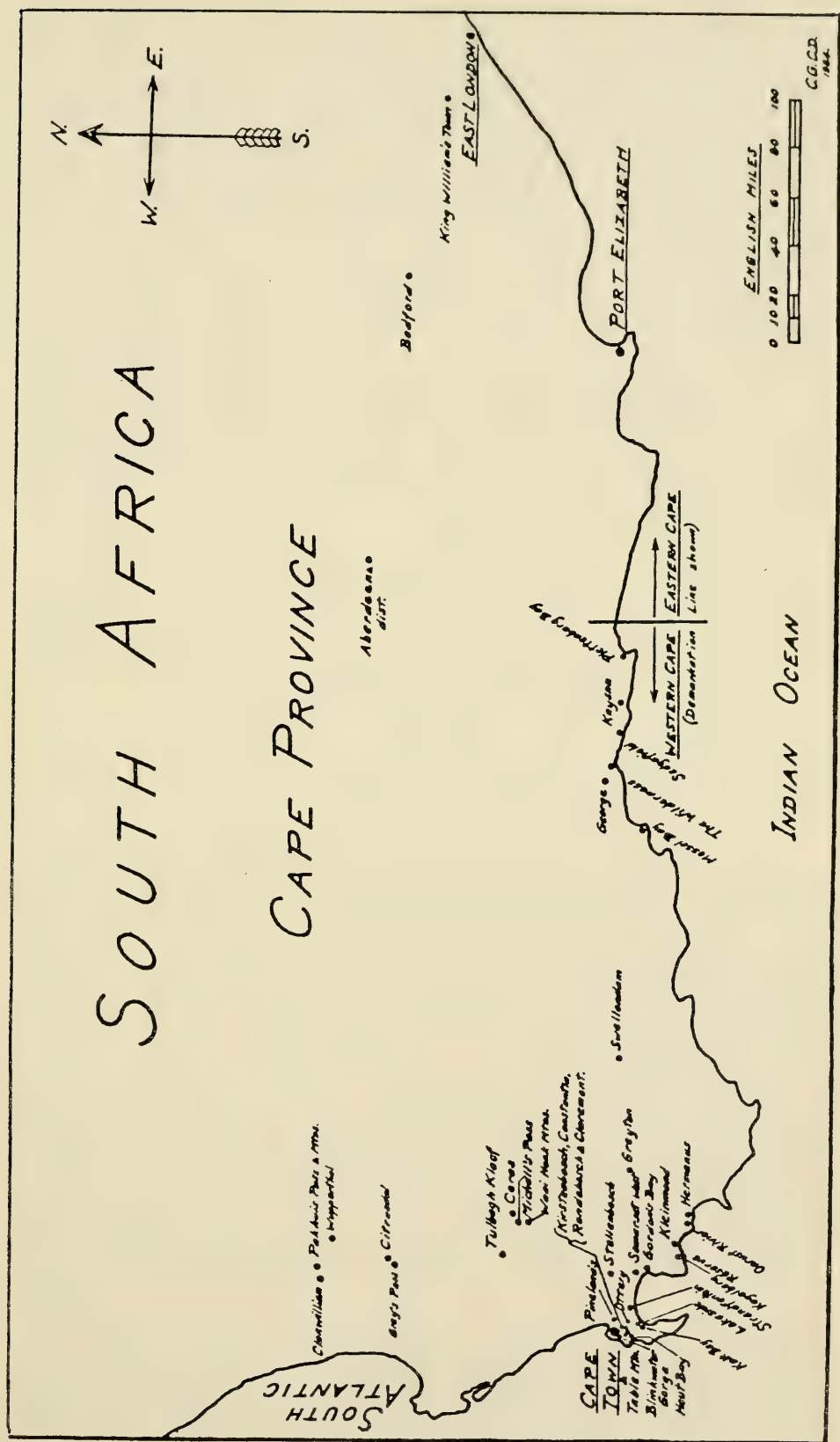
C. W. Wykeham: at Claremont in early March, 1981; in the Oranjezicht district of Cape Town a little later in the year; at Ottery, in the Cape Peninsula and at Gordon's Bay on 20th August, 1982; at Tulbagh-Kloof on 5th September, 1982 and at Strandfontein in November, 1982; also on the Waai Hoek Mtns. on March, 1984; Dr. D. M. Kroon: In Kogelberg Reserve, west of Kleinmond, in the first half of April, 1981; G. J. Howard: in his garden at Lakeside on 17th April, 1982; and his son William at Kalk Bay on 22nd April, 1982; T. Waters and H. Selb: at Kleinmond in numbers on 16th December, 1981 and at the same place in the later part of July, 1982; also many specimens at Kleinmond and Gordon's Bay on 31st December, 1982. Dr. J. Giliamee of Stellenbosch referred in a letter of 21-9-82 to hundreds of specimens having been seen just outside Gordon's Bay; and his having seen specimens in his own garden, for the first time, on September, 1981.

Since 1983 *agathina* has been common in the South Western Cape, especially in the coastal areas including the entire Cape Peninsula. It has been established with certainty that the butterfly breeds readily in its new westerly territories and that its food-plant is the widely distributed shrub, *Colpoon compressum* Berg. (Santalaceae).

Dickson reared many larvae and pupae, and finally 32 imagines, from eggs laid in captivity. Three females caught at Michell's Pass (near Ceres) in late May, 1982, by Claassens in the company of his wife, oviposited readily on leaves of the food-plant collected in Cape Town, and provided the material for the above rearing of the species as well as the photographs in the article. He also successfully reared many imagines from eggs laid by the butterfly on the food-plant in Blinkwater Gorge, at Camp's Bay, and found by Claassens in late April, 1984.

Dr. Mark Williams mentioned in *Metamorphosis*, No. 6, April, 1984, that he had found the species, commonly, all over the slopes of the Muizenberg Mtns., above St. James, and had found larvae feeding on *Colpoon compressum*, in January, 1984.

The somewhat barrel-shaped eggs, bright yellow in appearance, are generally laid on the underside of the leaves, and in batches, with as many as 82 eggs in one case, in one batch. The larvae emerged from the eggs after about 24 days of incubation. Emerging larvae ate the egg shells and sometimes the shells of neighbouring eggs from which larvae were emerging, as well as unfertilised eggs. The larvae cluster together in a strange manner, presumably as a protective measure, when resting, and are then hardly distinguishable individually as larvae. When disturbed the clustered larvae quickly descend from their resting place by means of a silken tread, thus rendering themselves inconspicuous among the foliage and allowing them to escape from predators. More recently, a considerable group of cap-



tive final-instar larvae were seen to move in well-defined processional formation when temporarily removed from their container.

From the literature consulted the final-instar larvae should have dull-red or red-brown intersegmental bands, but this was not so in any of the present final-instar larvae, in which the bands were devoid of any decidedly reddish tone. There are five larval instars. In the case of the present observations one batch of larvae attained full growth and pupated in about 53 days and the butterflies emerged from the pupae after about 20 days. There was little disparity in the incubation period of the different groups of eggs and the rate of development of the resultant larvae. Our observations represent, of course, those of a Cape winter brood of the species. The butterfly occurs throughout the year, if not equally plentiful in all months.

For the entire life-history of *Mylothris chloris agathina*, by the late Gowan C. Clark, see Van Son's work, *The Butterflies of Southern Africa*. Pt. I : 225-6, Pl. XL. (1949). The plate is, however, only a half-tone reproduction.

ZOPHOPETES DYSMEPHILA DYSMEPHILA (TRIMEN), A BUTTERFLY INTRODUCED INTO THE EXTREME WESTERN CAPE ON PALMS

By A. J. M. CLAASSENS Ph.D., M.Sc., and C. G. C. DICKSON M.Sc.

Zophopetes dysmephila dysmephila, known by its English name as the Palm Nightfighter, belongs to the family Hesperiiidae (Skippers). The natural haunts of this butterfly are found in the Eastern Cape, Natalland the Transvaal (but not the Highveld portions thereof), where it breeds on the common Date Palm, *Phoenix dactylifera* L. and another palm species, *P. reclinata* Jack.

The butterfly was first recorded from the Cape Peninsula by K. Gallon, from her home at Claremont on 10th September, 1980. Her identification of the specimen was confirmed by C. G. C. Dickson. Subsequent observations revealed that the early stages of the Skipper occurred on the Date Palms growing in the surrounding garden. This discovery of the butterfly in the extreme Western Cape was soon followed by the capture of specimens and records of early stages on Date Palms in a number of localities near and in the Cape Peninsula. Claassens and Dickson found the eggs and larvae of the butterfly on palms at Kirstenbosch on 24th May, 1981. The photographs of the early stages appearing in this article were taken from material collected at Kirstenbosch. G. J. Howard found eggs and larvae near his house at Lakeside on an earlier date. D. van der Walt caught a number of specimens on his veranda at Rondebosch,

and Dr. J. B. Ball has observed the butterfly feeding at Flowers in his garden at Pinelands. Others who have observed it, in the suburbs of Cape Town, have been Messrs. A. K. Brinkman, L. A. C. Buchanan and W. J. Copenhagen, who apparently was the first one to capture the butterfly here, without realising its significance or identifying it initially. The first specimen to be found in Cape Town itself was a dead one, picked up by V. Wykeham in the house of his father on 27th February, 1983. The early stages were then located readily on Date Palms in the vicinity of the house. The presence of the species in the centre of Cape Town was indicated, subsequently, when Dickson observed leaves which had been partly eaten by larvae on palms in the grounds of the Houses of Parliament. He also found larvae on Date Palms in his own garden. Claassens found the early stages on a young Date Palm in a garden at Hout Bay (Beach Estate). He also found them on *P. canariensis* and another palm, tentatively identified as *Chrysalidocarpus (Areca) lutescens*, the Butterfly Palm, standing between specimens of *P. canariensis*. The latter two records were from two nurseries, one at Hout Bay and the other at Constantia. These nurseries are supplied with young palms by Transvaal nurseries. No doubt other nurseries in the Cape Peninsula and in the South Western Cape introduced the early stages of *Z. d. dysmephila* in this way into these areas, and this introduction may well have started many years ago.

It may be mentioned that Messrs. V. L. and E. L. Pringle of Bedford, Cape, maintain that specimens of this species from Port Elizabeth (previously the butterfly's most western known limit) are darker than those from other localities and that, in their opinion, they represent at least another race.

At Kirstenbosch, Claremont, etc., the butterfly has established itself permanently and there must be other suitable areas where it has occurred for a number of years. In nurseries the larvae of this Skipper can do considerable damage to the leaves of young palms. On large palm trees the damage is negligible. A. L. de Villiers and C. R. McDowell (1982) pointed out that the introductions of plants from one part of the country into another can be a stepping stone to introductions of another kind. These authors referred to the Palm Skipper (as it is also called) as an example. A matter of interest which has not been investigated at all in the case of *dysmephila* is the fact that, together with the early stages, insect parasites not indigenous to the Peninsula may have been introduced there. G. C. Clark (1978) recorded parasites from all three early stages of this species.

Dysmephila is crepuscular and is thus not often seen in the day-time. It visits flowers at dusk and tends to be attracted to light. It is, therefore, perhaps surprising that the butterfly had not been recorded from the Cape Peninsula many years ago. It does, however, resemble a moth and this fact coupled with the butterfly's

habit of flying at dusk may have confused people, who are, generally speaking, not interested in moths. In the Cape Peninsula *dysmephila* appears to breed all the year round, but the main breeding season is during summer. C. W. Wykeham caught a fresh specimen when it was at rest on a Banana plant in his garden at about 2.30p.m., on 16th June, 1984. The butterfly can be reared easily from any of the early stages. The larvae, however, need to be supplied with fresh palm leaves of the right kind. For the complete life-history, with beautiful illustrations in colour, see Clark, *loc. cit.* One of the most striking habits of the larvae of *dysmephila* is the manner in which they construct a shelter. After eating the egg-shell the larva commences, very soon, to construct a shelter for itself near the end of a leaf, the halves of which are brought together with silken strands. They are not, however, pulled together by the larva, the process being a gradual one through, apparently, the contraction of the successive strands of silk. The extremity of the leaf is first eaten, and the larva then moves down the leaf, extending the shelter as it does so. Finally, it should be stated that there are no indigenous palms in the Cape Peninsula. The Date Palm, which is so common here today, was presumably introduced by the early Dutch settlers, possibly centuries ago.

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Trimen, Roland. 1889. *S. A. Butt.* III : 327-29. (Contains most interesting observations on the habits of the species by Colonel J. H. Bowker, in the Eastern Cape (as previously constituted) and Natal.)

RECENT INCREASE IN LEUCOMA SALICIS L. (WHITE SATIN MOTH) IN HEREFORD — I have run an m.v. light in Hereford City since 1973 and the numbers of this insect have increased dramatically over this period, as the following records show. The number of individuals is given in brackets : 1973-1977 (0) : 1978 (1) ; 1979 (2) ; 1980-1982 (0) ; 1983 (17) : 1984 (70), with 35 on July 5th ; 1985 (68) with 31 on July 8th.

My orchard on the banks of the River Wye would seem an ideal habitat with a large variety of willows and poplars. Dr. M. Harper tells me that he has noticed an increase in this species in his garden near Ledbury. Is this phenomenon local or more widespread? — Dr. B. E. MILES, 68 Hampton Park Road, Hereford, HR1 1TJ.

UNUSUAL FOODPLANTS OF SVENSSON'S
COPPER UNDERWING (*AMPHIPYRA BERBERA*
SVENSSONI FLETCHER) AND THE MOUSE
(*AMPHIPYRA TRAGOPOGINIS* [CLERCK]),
LEPIDOPTERA: NOCTUIDAE

By E. G. HANCOCK * and I. D. WALLACE **

Since the separation of *Amphipyra berbera svenssoni* from *A. pyramidea* (L.) (Fletcher, 1968), the possible list of foodplants remains small. According to Bretherton *et al.*, (1983) only 'oak (*Quercus* spp.)' is recorded with certainty.

On several occasions recently we have found larvae of *A. berbera svenssoni* in circumstances which appear to indicate a wider range of possible foodplants. On 16 June, 1983 one of us (E.G.H.) found a larva in the panicle of a white cultivar of the lilac (*Syringa vulgaris*). The camouflage was extremely effective amongst the loose flowers and the resemblance to a sphingid larva was noticeable. In the opinion that this was an accidental association, other foodplants were offered, birch (*Betula pendula* Roth), which overhangs the lilac shrub and *Rosa* spp. which grow nearby in the same garden in Bolton, Lancashire (grid ref. SD712118). These were all rejected in favour of the flowers of lilac which were consumed for seven days before pupation. The mature larva matched exactly the description given in Bretherton, *et al.* (1983) and the adult emerged on 6 July, 1983.

On discussion, it was discovered that similar experiences had occurred to the other author (I.D.W.). A larva which reared out as *A. berbera svenssoni* was found on 14 June 1978 eating young rhododendron (*Rhododendron ponticum* Linn.) leaves at Cole Mere, Shropshire (grid ref. SJ43-33-). The plant was growing at the base of a bare-trunked sycamore (*Acer pseudoplatanus* Linn.) in the middle of a trampled area. It seems likely that the larva had fallen from the sycamore and not finding any other leaves had turned to rhododendron.

In captivity it ate both sycamore and rhododendron. (A november moth larva, *Epirrita dilutata* (D. & S.) found at the same place only ate rhododendron when offered a choice and also successfully emerged.) Two larvae of *A.b. svenssoni* were found also eating the leaves of rhododendron forming the shrub layer under tall trees (species not recorded) by the Nant Felin Blwm, Fynnongroyw, Clwyd (grid ref. SJ138888), on 1 June 1982. These larvae were particularly fond of rhododendron flowers. Quaker larvae (*Orthosia* sp.) found at the same time starved rather than eat the alien plant.

* Glasgow Museums and Galleries, Kelvingrove, Glasgow, G3 8AG.

** Merseyside County Museums, William Brown Street, Liverpool, L3 8EN.

Once again it seems likely that all the caterpillars had fallen from the deciduous trees above .

At least one other species of this genus shows a predeliction for flowers as a food source. To quote Barrett (1899), *Amphipyra tragopoginis* (Clerck) is "very fond of the blossoms of garden flowers and apparently of yellow flowers whether cultivated or wild . . . I have noticed its liking for the handsome yellow blossoms of *Eschscholzia californica* (California poppy) in the hollow of which it will lie through the day and eat the petals at night". In confirmation of this a larva of this species was found (I.D.W.) feeding on the flowers of monkey-flower (*Mimulus guttatus* DC) at Bettisfield, Clwyd (grid ref. SJ466356). It would only eat the flowers and was the only insect found feeding on an extensive stand of the plant. The adult emerged successfully.

The small number of insect species which have managed to colonise rhododendron and other established alien plants indicates the potential interest in relatively large lepidopterans feeding on such plants. Further observations on this genus of moths might be of value in making any deductions concerning the biological implications of this behaviour.

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Fletcher, D. S., (1968) *Amphipyra pyramidea* (Linn.) and *A. berbera* Rungs (Lep., Noctuidae), two species confused *Ent. Gazette*, 19: 91-106.
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THE BLOXWORTH SNOOT HYPENA OBSITALIS HBN. IN KENT — On 18th August 1985 I found a specimen of this rare moth in my m.v. trap, which I operate in my garden. This appears to be the ninth recorded British specimen and the first for Kent. On referring to J. M. Chalmers-Hunt's note (*Ent. Rec.* 95 (1983) p.126) I find that recent records — Scilly (1962) Dorset (1965) Sussex (1983) and now Kent (1985) indicate a spread eastwards. Does this mean a migration in each of these years, each in a more easterly direction or is the species established and spreading eastwards? If the latter it is surprising that it survived last winter. The food plant is given as nettle which is plentiful in various parts of the garden. The species hibernates in the perfect state and in Malta where the moth is very common, it is said to occur all the year round. (*Ent. Rec.* 95 (1983) p.74) G. H. YODEN, 18 Castle Avenue, Dover.

UNUSUAL EGG LAYING STRATEGIES OF THE
SMALL TORTOISESHELL BUTTERFLY,
AGLAIS URTICAE

By A. S. PULLIN*

The small tortoiseshell is normally thought of as a butterfly which lays eggs in batches on the underside of the leaves of the stinging nettle, *Urtica dioica*. The result of this being that the ensuing brood of larvae, all from a single female, live gregariously up until their final instar and presumably gain advantage in terms of survivability by doing so (Stamp 1980, Chew and Robbins 1983, Courtney 1984).

Recent observations by the Author on the oviposition behaviour of the small tortoiseshell complicate this otherwise simple strategy. Whilst recording oviposition on large nettle patches during June and July 1984 females were observed laying eggs on top of previously deposited egg batches. The mechanism by which the female locates previously laid eggs is not known, however female searching behaviour was only of a limited nature, the butterfly would alight on a small number of nettle leaves and investigate the underside before oviposition. This behaviour could not be distinguished from the apparently normal situation where the female eventually chooses an 'eggless' leaf on which to oviposit.

Further evidence for this strategy of egg-laying has come from observations on the composition of larvae on nettle patches. First instar groups collected were found to be unusually large in some cases (>150). Larvae collected at a later stage commonly fell into two developmental groups, one group being one or two days behind the other. The numbers of larvae belonging to each group in the latter situation were not always of the same order and further investigation is being undertaken.

It seems to me that there may be several explanations for the above behaviour. The most obvious is that a female is returning to a previously deposited egg batch to lay additional eggs, implying the ability to memorise locations, as has been recorded for *Heliconiine* butterflies (Gilbert 1975, Benson et al 1975). The second explanation is that larger groups of eggs or larvae may have a greater advantage than small groups (probably true since this species has aposematic larvae), provided that food is not limiting. This applies equally to the same female returning to an egg mass, or a second female locating an egg mass, and is merely an extension of the idea of gregarious lifestyles being advantageous to this, and other species (Stamp 1980). A third possibility is that some females seek to spread their eggs in small batches onto the previously laid larger batches of other females, thereby gaining for their offspring the advantage

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of a gregarious lifestyle without the risk of catastrophic mortality rendering their genetic line extinct.

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SPRING RECORDS OF HYLES LIVORNICA LIVORNICA (LEPIDOPTERA:SPHINGIDAE) FROM SOUTH-WEST IRELAND. — On 6th April 1985, a female striped hawk-moth, *Hyles livornica livornica* (Esper), was captured indoors at Kilnaclasha near Skibbereen, West Cork (VC H3) (W 140366), 8km from the open sea. Two specimens of the painted lady, *Cynthia cardui* (L.), were observed on the same occasion.

A further female *H. l. livornica* was taken by Dr. T. Adams at Courtmacsherry Hotel, Courtmacsherry, on the West Cork coast (W 317423) on 30th April 1985. This specimen was also found indoors and was in a very worn condition.

During the first six days of April winds were from a generally southerly direction on the south coast of Ireland. This would have been suitable for immigration of this species. However, the prevailing winds were from a westerly to north-westerly direction towards the end of the month. This, combined with the very worn condition of the later specimen may indicate that it arrived at the beginning of the month.

Note: The nomenclature used here follows that of Eitschberger & Steiniger (1976) (*Atalanta* **7**: 71-73). These authors consider that *Hyles lineata lineata* (Fabricius, 1775) and *H. livornica livornica* (Esper, 1779) should be treated as distinct species. — K. G. M. BOND and J. A. GOOD, Department of Zoology, University College, Cork, Rep. of Ireland; LYNN WRIGHT, Kilnaclasha, Skibbereen, Co. Cork, Rep. of Ireland.

RHOPALOCERA
RECORDED IN ANDORRA
DURING 1981 AND 1983

By K. D. Z. SAMUELS, B.Sc., F.R.E.S.*

The Principality of Andorra is situated in the Pyrenees between France and Spain and can easily be reached by car from London in two days. The two-dimensional size of Andorra is only 468 square kilometres (175 square miles). However, the mountainous nature of the Principality is such that the surface area is many times this figure, with the lowest point being 838m (2750ft) and the highest point being 2942m (9652ft) above sea level. Andorra's only resident entomologist, Dr. Patrick Roche, has recorded and collected in the Principality for a number of years. Roche (1982a and 1982b) lists 134 species recorded by both himself and a number of visiting entomologists.

During my first visit to Andorra between 16.vii.81 and 21.viii.81, with fellow lepidopterist T. Wrigley, 103 species of Rhopalocera were recorded. During my second visit between 14.viii.83 and 24.viii.83, an additional two species were recorded. Of the 105 species recorded during the two visits reported here, four were previously unrecorded by Dr. Roche and a further two were new to his Andorran collection. Representatives of all six species have been deposited in his extensive reference collection of Andorran insects. This collection will form the basis for a national collection.

A total of over 40 sites ranging in size from a 100m to a 1km quadrat were worked during 1981 and 1983 covering almost all except the most inaccessible of the entomologically promising areas between 900m (2950ft) and 2400m (7875ft) above sea level. Figure 1 shows the U.T.M. grid system and allows the positions of the localities mentioned in the list of species to be located. As an example, the dark circle indicating the centre of Sant Julia de Loria is situated within the 1km grid square CH.76.03. Where a 100m grid square reference is given, this can be more accurately located on the 1:50,000 or 1:10,000 official maps of Andorra.

Unless otherwise stated, the data given in the list of species applies only to specimens recorded during the two visits in 1981 and 1983. The order followed is that of Gomez-Bustillo and Fernandez-Rubio (1974a and 1974b). The nomenclature followed is that of Higgins and Riley (1980).

The 31 species listed by Roche (1982a and 1982b) which were not recorded during the two visits reported here are given under each family in order to present a more complete list of the Rhopalocera of Andorra.

*1 Martin's Mount, Meadway, Barnet, Herts. EN5 5LQ.

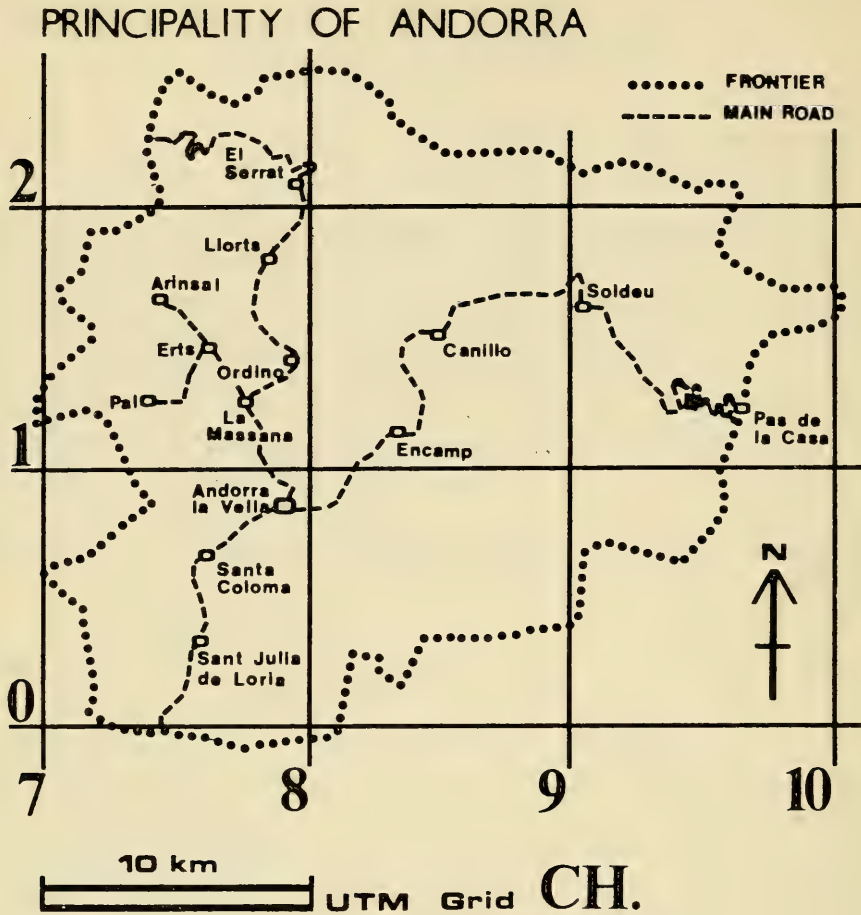


Figure 1. Main localities in Andorra.

List of species

Hesperiidae

Carcharodus alceae Esp., ssp. *australis* Zell. Recorded from Aixirivall (CH.767-8.043. 1050m) between mid-July and mid-August and from Coll de Jou (CH.74.02. 1150m) and Cortals de Sispony (CH. 76.10. 1500m) during the third week of August.

C. flocciferus Zell. Recorded from Aixirivall (CH.768.043. 1050m) on 26.vii.81.

C. lavertherae Esp. A species new to Dr. Roche's Andorran list. Two specimens recorded from Les Neres, Coll d'Ordino (CH.82.12. 2200m) on 11.viii.81.

Pyrgus carthami Hb. A species new to Dr. Roche's Andorran list. Recorded from Coll de la Botella (CH.732.130. 2070m) on 2.viii.81 and 15.viii.83, Pal (CH.744.129. 1650m) on 9.viii.81, Els Cortals (CH.87.11.2050m) on 18.viii.81 and from Cortals de Sispony (CH.76.10. 1500m) on 17.viii.83.

P. serratulae Ramb. Recorded from Fontaneda (CH.726-7.022-3. 1700m), Els Cortals (CH.87.11. 2050m), Coll de la Botella (CH.73. 13. 2100m) and La Rabassa (CH.783.003. 2050m) between late July and the third week of August.

P. alveus Hb., ssp. *accreta* Ver. Fairly common and widespread at 1050-2300m during July and August.

Spialia sertorius Hoff. Recorded from Fontaneda (CH.726-7.022-3. 1700m), Pal (CH.744.123. 1750m) and Cortals de Sispony (CH.76. 10. 1500m) between late July and the third week of August.

Thymelicus flavus Brunn., ssp. *major* Tutt. Fairly common and widespread at 1600-2000m during July and early August.

T. lineola Ochs., ssp. *ludoviciae* Mab. (?). Fairly common and widespread at 1600-2300 between late July and the third week of August.

Ochlodes venatus Brem. & Grey, ssp. *faunus* Turati. One colony recorded from Aixirivall (CH.767-8.043. 1050m) during the third week of July.

Hesperia comma L. Common and widespread at 1150-2300m between mid-July and late August.

(Additional species: *Erynnis tages* L., ssp. *brunneus* Tutt., *Pyrgus cacaliae* Ramb., *P. malvae* L., ssp. *malvoides* Elmes & Edward, *P. carlinae* Ramb., ssp. *cirsii* Ramb., *Thymelicus acteon* Rott.).

Lycaenidae

Laeosopis roboris Esp., ssp. *demissa* Ver. Recorded from Aixirivall (CH.767-8.043. 1050m) during July and August.

Nordmannia ilicis Esp. Recorded from Aixirivall (CH.767-8.043. 1050m) and Fontaneda (CH.741.024. 1290m) during July.

Thecla betulae L. Recorded from Aixirivall (CH.767-8.043. 1050m) during August.

Heodes virgaureae L. Common and widespread at 1250-2300m between mid-July and late August.

H. alciphron Rott., ssp. *gordius* Sulz. Small colonies recorded throughout S. W. Andorra at 1630-2100m between mid-July and mid-August.

H. tityrus Poda. Recorded from Fontaneda (CH.726-7.022-3. 1700m), Aixirivall (CH.767-8.043. 1050m) and Coll de Jou (CH. 74.02. 1150m) during late August.

Palaeochrysophanus hippothoe L., ssp. *mirus* Ver. Common and widespread at 1050-2000m during late July and August.

Lampides boeticus L. Two colonies recorded from Aixirivall (CH. 767-8.043. 1050m) during the third week of July and from Cortals de Sispony (CH.76.10. 1500m) during the third week of August.

Maculinea arion L., ssp. *obscura* Christ. Fairly common and widespread throughout W. Andorra at 1050-2000m between mid-July and early August.

Celastrina argiolus L., ssp. *calidogenita* Ver. Fairly common between Aixirivall and La Rabassa (CH.76-80.00-04. 1050-2050m) between mid-July and early August.

Everes alcetas Hoff. Recorded in abundance from Aixirivall (CH.767-8.043. 1050m) between late July and early August.

Cupido minimus Fuess., ssp. *noguerae* Haig-Thomas. Two specimens recorded from Coll de la Gallina (CH.72.03. 1800m) on 17.vii.81.

Plebjus argus L., ssp. *philonomus* Berg. (?). Common and widespread, especially in W. Andorra, at 1050-2250m between late July and the third week of August.

Lycaeides idas L., ssp. *saturior* Ver. Common and widespread at 1050-2300m between late July and the third week of August.

Agriades glandon de Prunner, ssp. *magnaglandon* Ver. (?). Two colonies recorded from La Rabassa (CH.783.003. 2050m) during late July and from Vall d'Incles (CH.93.18. 2000m) during mid-August.

Eumedonia eumedon Esp. One colony recorded from Vall d'Incles (CH.93.18. 2000m) on 15.viii.81. Roche (1982a) states that this species occurs in excessively localised colonies, not straying further than about two metres from its larval foodplant.

Cyaniris semiargus Rott., ssp. *montana* Mayer-Dur. Fairly common and widespread throughout W. Andorra at 1050-2300m between late July and mid-August.

Polyommatus eros Ochs. A species new to Dr. Roche's Andorran list. Two colonies recorded from Pal (CH.744.123. 1750m) on 4.viii.81 and Coll de la Botella (CH.73.13.2100m) on 15.viii.83.

P. icarus Rott. Fairly common and widespread at 1050-1700m between early and mid-August.

Agrodiaetus amanda Schneider, ssp. *pyrenaeorum* Ver. Two colonies recorded from Fontaneda (CH.726-7.022-3. 1700m) and Pal (CH. 744.123.1750m) between late July and early August.

A. escheri Hb., ssp. *rondoui* Obthr. Two colonies recorded from Fontaneda (CH.740.014. 1500m) and Aixirivall (CH.767-8.043. 1050m) during late July.

Plebicula dorylas D. & S. Fairly common and widespread at 1630-2000m during late July and August.

Lysandra coridon Poda. Abundant and widespread at 1150-2300m during July and August.

L. bellargus Rott. One colony recorded from Fontaneda (CH.740.014.1500m) during the third week of July.

Aricia agestis D. & S., ssp. *cramera* Eschscholtz. Fairly common and widespread throughout S. W. Andorra at 1700-2100m during the first two weeks of August.

A. artaxerxes F., ssp. *montensis* Ver. Fairly common and widespread throughout S. W. Andorra at 1500-1700m between late July and the third week of August.

Pseudoaricia nicias Meig., ssp. *judithi* Gomez-Bustillo. Recorded by Gomez-Bustillo and Fernandez-Rubio (1974b) as extremely rare in the Iberian Peninsula, occurring solely in Vall d'Aran, E. Pyrenees. One very localised colony was recorded from Vall d'Incles (CH.930.185. 1925m) on 15-18.viii.81 and 21.viii.83 within an area of only 5m². A second colony was recorded from Segudet (CH.80.13. 1500m) on 18.viii.83.

(Additional species: *Quercusia quercus* L., *Callophrys rubi* L., ssp. *virgatus* Ver., *Strymonidia spini* D. & S., ssp. *bofilli* Sagarra., *S.w-album* Knoch., *Nordmannia acaciae* F., *N. esculi* Hb., *Lycaena phlaeas* L., *Glaucopsyche alexis* Poda., *Maculineaalcon* D. & S., *Everes argiades* Pallas., *Agrodiaetus thersites* Cantener.)

Satyridae

Pararge aegeria L. One colony recorded from Coll. de Jou (CH. 74.02. 1150m) during late August.

Lasiommata megera L. Fairly common and widespread throughout S. W. Andorra at 1050-2050m between mid-July and late August.

L. maera L., ssp. *adrasta* Hb. Fairly common and widespread throughout W. Andorra at 1050-1800m between late July and the third week of August.

Coenonympha arcania L. Abundant and widespread throughout W. Andorra at 1050-2050m between mid-July and mid-August.

C.dorus Esp. Three colonies recorded from Aixirivall (CH.767-8.043. 1050m), Fontaneda (CH.726-7.022-3. 1700m) and La Rabassa (CH.783.003. 2050m) between mid- and late July.

C. pamphilus L. Fairly common and widespread throughout W. Andorra at 1050-2050m between late July and mid-August.

Melanargia galathea L., ssp. *lachesis* Hb. Common and widespread throughout W. Andorra at 1050-1500m between mid- and late July.

M. russiae Esp., ssp. *centralis* Sagarra. Fairly common and widespread throughout S. W. Andorra at 1050-1700m between mid- and late July.

Hipparchia alcyone D. & S. Common and widespread throughout W. Andorra at 1050-2050m between late July and mid-August.

H. semele L., ssp. *cadmus* Fruh. A single specimen recorded from Aixirivall (CH.767-8.043. 1050m) on 29.vii.81.

Neohipparchia statilinus Hufn. One colony recorded from Aixirivall (CH. 767-8.043. 1050m) during the third week of August.

Brintesia circe F. Two large colonies recorded from Aixirivall (CH. 767-8.043. 1050m) and Coll de Jou (CH.755.030. 1050m) between mid- and late July.

Satyrus actaea Esp. Common and widespread throughout W. Andorra at 1050-2000m between mid-July and mid-August.

Chazara briseis L. Fairly common and widespread throughout W. Andorra at 1050-1700m during the third week of August.

Pyronia tithonus L. Fairly common and widespread throughout S. W. Andorra at 1050-2050m between late July and early August.

Maniola jurtina L. Common and widespread throughout S. W. Andorra at 1050-1700m between late July and the third week of August.

Erebia euryale Esp., ssp. *pyraenaeicola* Golz. Fairly common and widespread at 2000-2050m during August.

E. epiphron Knoch, ssp. *fauveauti* de Lesse. Abundant and widespread at 1700-2200m between mid-July and the third week of August

E. triaria de Prunner, ssp. *evias* Godart. A single specimen recorded from Vall d'Incles (CH.93.18. 2000m) on 15.viii.81.

E. gorgone Boisd. Two colonies recorded from Coma del Forat (CH.753.222. 2200m) and Vall d'Incles (CH.93.18. 2000m) between early and mid-August.

E. cassioides Hochenworth, ssp. *arvernensis* Obthr. Abundant and widespread at 1790-2100m between the third week of July and late August.

E. lefebvrei Boisd. A species new to Dr. Roche's Andorran list. A single specimen recorded from Pont de la Coma (CH.744.123. 1750m) on 4.viii.81.

E. neoridas Boisd. Talbot (1928) collected a series of males from "Soldeu to Andorra-la-Viella, valley of the Valira del Oriente, 3000-5000ft, 21.viii.26" and from "Las Escaldas to Encamp, 3000-4000ft, 3.ix.26". However, there are no further Andorran records of this species in the literature. Two males were recorded from Fontaneda (CH.726-7.022-3. 1700m) on 19.viii.81. During the 1983 visit this species was the commonest *Erebia*, with males and females being recorded from Anyos (CH.80.11. 1600m), La Gonarda (CH. 79.13. 1350m), Cortals de Sispony (CH.76.10. 1500m) and Coll de la Gallina (CH.72.03. 1800m).

E. meolans de Prunner, ssp. *pyrenaica* Ruhl. Abundant and widespread at 1250-2050m between the third week of July and late August.

(Additional species: *Hipparchia fagi* Scopoli., *Hyponephele lycaon* Kuehn., *Erebia hispania* Butler., *E. oeme* Hb., ssp. *podia* Staud., *E. pandrose* Borkhausen. Also **Nemeobiidae**: *Hamearis lucina* L.)

Libytheidae

Libythea celtis Laicharting. One colony recorded from Aixirivall (CH.767.043. 1050m) on 19-26.vii.81. The adults remained on the larval foodplant, *Celtis australis* L., unless disturbed, in which case they quickly returned. Also recorded only from this site during 1983.

Nymphalidae

Apatura ilia D. & S., ssp. *barcina* Ver. A single specimen f. *clytie* D. & S. recorded from Aixirivall (CH.768.043. 1050m) on 13.viii.81.

Limenitis camilla L. A single specimen recorded from Fontaneda (CH.741.024. 1290m) on 17.vii.81.

L. reducta Stdgr., ssp. *herculeana* Tichell. A single specimen recorded from Fontaneda (CH.741.024. 1290m) on 17.vii.81.

Vanessa atalanta L. One colony recorded from Aixirivall (CH.767-8. 043. 1050m) during the third week of July.

Cynthia cardui L. Common and fairly widespread at 1050-2000m between early and mid-August.

Inachis io L. Fairly common and widespread at 1050-1500m during July and August.

Aglais urticae L. common and widespread at 1470-2050m during July and August.

Nymphalis antiopa L. A single specimen recorded from Vall d'Incles (CH. 915.183. 1800m) on 18.viii.81.

Polygonia c-album L. One colony recorded from Aixirivall (CH. 767-8.043. 1050m) between late July and mid-August.

Mellicta deione Geyer. Two colonies recorded from Coll de la Botella (CH.732.130. 2050m) and Aixirivall (CH.767-8.043. 1050m) during August.

M. athalia Rott., ssp. *aguilari* Sagarra. Abundant and widespread throughout W. Andorra at 1050-2050m between mid-July and mid-August.

M.parthenoides Keferstein. Three colonies recorded from Coll de la Botella (CH.732.130. 2050m), Fontaneda (CH.726-7.022-3. 1700m) and Pal (CH.74.12. 1600m) between late July and mid-August.

Melitaea didyma Esp., ssp. near *meridionalis* Stdgr. Abundant and widespread at 1050-2050m between mid-July and mid-August.

M. phoebe D. & S. Two colonies recorded from Aixirivall (CH.767-8. 043. 1050m) and Fontaneda (CH.726-7.022-3. 1700m) between mid-July and late August.

Boloria pales D. & S., ssp. *pyrenesmiscens* Ver. Fairly common and widespread at 1630-2050m between late July and mid-August.

B.napaea Hoff. Common and fairly widespread at 1750-2050m between mid-July and early August.

Clossiana selene D. & S. A single specimen recorded from La Rabassa (CH.783.003. 2050m) on 29.vii.81.

C.euphrosyne L. Common and fairly widespread at 1050-2200m between late July and mid-August.

C. dia L., ssp. *laectior* Ver. One fairly large colony recorded from Aixirivall (CH.767-8.043. 1050m) between mid- and late July.

Brenthis daphne D. & S. One colony recorded from Aixirivall (CH.767-8.043. 1050m) between mid- and late July.

B. ino Rott. Two colonies recorded from Pal (CH.744.123. 1750m) and Pal (CH.744.129. 1630m) during early August.

Issoria lathonia L. Common and widespread throughout S. W. Andorra at 1050-1700m between late July and the third week of August.

Fabriciana adippe D. & S. Fairly common and widespread throughout S. W. Andorra at 1050-1700m between the third week of July and the third week of August.

Mesoacidalia aglaja L. Abundant and widespread throughout W. Andorra at 1050-2050m between the third week of July and the third week of August.

Argynnis paphia L. Two colonies recorded from Aixirivall (CH. 767-8.043. 1050m) and Segudet (CH.80.13. 1500m) between the third week of July and the third week of August.

(Additional species: *Nymphalis polychloros* L., *Eurodryas aurinia* Rott., ssp. *debilis* Obthr., *Melitaea cinxia* L., *M. diamina* Lang., ssp. *vernetensis* Obthr., *Proclossiana eunomia* Esp., *Fabriciana niobe* L.)

Pieridae

Leptidea sinapis L. Common and fairly widespread at 1050-2050m between late July and the third week of August.

Aporia crataegi L. Common and fairly widespread throughout W. Andorra at 1050-2050m between the third week of July and early August.

Pieris brassicae L. Fairly common and widespread throughout S. W. Andorra at 1050-1700m between late July and late August.

Artogeia rapae L. Abundant and widespread at 1050-1800m between mid-July and the third week of August.

A. napi L. Abundant and widespread at 1050-1600m between mid-July and mid-August.

Pontia daplidice Hb. Two colonies recorded from Aixirivall (CH. 767-8.043. 1050m) and Cortals de Sispony (CH.76.10. 1500m) between late July and the third week of August.

P. callidice Hb. Three colonies recorded from Coma del Forat (CH.753.222. 2200m) on 8.viii.81, Port d'Envalira (CH.94.12. 2400m) on 20.viii.81 and Coll de la Botella (CH.73.12. 2100m) on 15.viii.83.

Anthocharis cardamines L. A single specimen recorded from Aixirivall (CH.768.043. 1050m) on 27.vii.81.

Colias hyale L. A single specimen recorded from Coll de Jou (CH. 74.02. 1150m) on 22.viii.83.

C. australis Ver. Recorded by Roche (1982b) as being common and widespread. However, only three specimens were recorded, from Fontaneda (CH.740.014. 1500m) on 21.vii.81, Fontaneda (CH.726-7.022-3. 1700m) on 29.vii.81 and Coll de Jou (CH.74.02. 1150m) on 22.viii.83.

C. phicomone Esp., ssp. *oberthuri* Ver. One very large colony recorded from La Rabassa (CH.783.003. 2050m) during late July. Smaller colonies recorded from Port de Cabus (CH.704.128. 2300m) and Vall d'Incles (CH.93.18. 2000m) between early and mid-August.

C. crocea Geoffr. Very common and widespread at 1050-2100m between the third week of July and the third week of August. However, only two specimens of the female-form *helice* Hb. were recorded, from Cortals de Sispony (CH.76.10.) on 10.viii.81 at 1600m and on 7.viii.83 at 1500m. Higgins and Riley (1980) state that the white female-form *heliceis* genetically controlled and behaves as a dominant to the common yellow form, in a balanced polymorphism with a ratio of about 10% in most populations. It is interesting to note that although the yellow form is very common and widespread an Andorran female-form *helice* has only been reported on one previous occasion, again from Cortals de Sispony (Gossling, 1980-81).

Gonepteryx rhamni L. Common and widespread at 1050-2100m between late July and late August.

G. cleopatra L., ssp. *europaea* Ver. A single specimen recorded from Aixirivall (CH.768.043. 1050m) on 27.vii.81.

(Additional Species: *Euchloe ausonia* Hb., ssp. *simplonia* Frey., *Anthocharis belia* L., ssp. *euphenoides* Staud.)

Papilionidae

Papilio machaon L., ssp. *hispanicus* Eller. Two colonies recorded from La Rabassa (CH.783.003. 2050m) and Fontaneda (CH.74.01. 1450m) between late July and the third week of August.

Iphiclides podalirius L., ssp. *feisthamelii* Duponchel. Two colonies recorded from Fontaneda (CH.739.017. 1470m) and Aixirivall (CH.767.043. 1050m) between late July and early August.

Parnassius apollo L., ssp. *pyrenaicus* Hardcourt-Bath. Abundant and widespread at 1500-2000m between the third week of July and mid-August.

(Additional Species: *Zerynthia rumina* L.)

Postscript

During November 1982 Andorra was subjected to relentless rain, causing sudden and severe flooding. Some bridges and many stretches of road just vanished, houses and other buildings on river banks were partially or totally washed away and cars were swept away and overturned. The press reported 14 dead and 15 missing. There is no doubt that the Rhopalocera, like the rest of the flora and fauna, suffered. Many habitats literally disappeared overnight.

In spite of this Andorra still remains an entomologically rich area that has been largely overlooked by lepidopterists, particularly at the more remote peaks and valleys. It is likely that the exploration of these sites will reveal a few more species of Rhopalocera to add to the Andorran list.

Acknowledgements

I wish to thank the Worshipful Company of Haberdashers' for the award of the Northcott Travelling Scholarship which enabled me to undertake the 1981 visit. I also thank Tim Wrigley for his assistance and especially Patrick Roche for very many hours of his time.

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LYMANTRIA DISPAR LINN IN DORSET — a fine male of this species turned up in my garden m.v. trap on the night of 29th August 1985. This was a warm night with a southerly wind and the only night this August when the trap count passed the 100 mark! E. H. WILD, 7 Abbots Close, Highcliffe, Christchurch, Dorset.

PARAGE AEGERIA L. (SPECKLED WOOD) IN FIFE — On 6th October 1984, Dr. M. P. Harris was very fortunate to see a single speckled wood butterfly on the Isle of May. Not only is this the first record for this National Nature Reserve, but is also the first record for Fife this century, the only previous record being from Aberdour in 1890 (Thompson, G. *The Butterflies of Scotland*). Although there were colonies around Perth and in the Borders earlier this century these are now extinct (Heath, J., Pollard, E. and Thomas, J. 1984 *Atlas of Butterflies in Britain and Ireland*). The nearest known colonies are on the Moray/Loch Ness area on the west coast of Scotland. To the south there appear to be only isolated sites in north-east England. It would be interesting to know of any other sightings of this species away from regular haunts. P. K. KINNEAR, Nature Conservancy Council, 11 Hillview Road, Balmullo, St. Andrews, Fife.

[We hope shortly to publish a paper on the extension of the range of *aegeria* in north-east Scotland. — Ed.]

A FURTHER COLONY OF *ANASIMYIA INTERPUNCTA*
HARRIS (DIPT.: SYRPHIDAE)
IN THE THAMES ESTUARY AREA

By C. W. PLANT BSc FRES*

The recent article by A. A. Allen on *Anasimyia interpuncta* Harris on the Thames marshes at Erith, Kent, (*Ent. Rec.* 97: 85-86), prompts me to report on a colony of this species at Rainham, South Essex during 1985. Credit for this discovery must go to my young friend Ian Wynne, whose determinations I was pleased to confirm. The site involved is a very small one, being a short stretch of the Ingrebourne River just south of the A.13 trunk road. I visited the site myself daily from 26th to 29th May 1985, and on each occasion found the species in evidence. Capture was another matter however, and whilst sweeping proved most un-productive, the best method seemed to be standing still on one spot amongst the reeds at the waters edge and swiftly netting each *Anasimyia* as it appeared. Subsequent visits during the first two weeks of June proved less productive however, with only a few worn individuals being noted up to the 6th.

Since some of my observations are at variance with those of Mr. Allen, some comments seem to be appropriate. Allen records the species well into June 1984, whilst my own observations during 1985 seem to confirm the statement in Stubbs and Falk (1983) that the flight period is May. However, 1985 could hardly be described as a typical year, with the cold and wet weather extending beyond the end of spring and on to the end of June! The fact that a few stragglers were indeed noted in the first week of June at the Rainham site however, may support Allen's observations, and clearly both sites would repay further examination during 1986. It would be interesting to read Allen's 1985 observations on the Erith colony in the pages of this journal.

Allen also notes this species in association with buttercups (*Ranunculus* spp.). At the time of my researches I was unaware of his observations, but I did carefully work all the flowers present, including a large number of buttercups, for hoverflies, and found no evidence of this species, (again the 1985 weather may have had some bearing on this). Indeed, I have been unable to locate the species anywhere other than amongst fairly dense stands of *Phragmites* at the very edge of the water which, at this point, is stationary.

Apparently suitable habitats exist 1.5 Km to the north-east at Ingrebourne Marsh and Berwick Pond, but here I could locate only *A. lineata* (Fabr.) and in lesser numbers *A. transfuga* (Linn.). North across the River Thames from the Kent colony lies Aveley Marsh,

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a Ministry of Defence area for which an entry permit is required. Again I could find no evidence of *A. interpuncta* here in the presence of similar habitat areas. I understand that Ian Wynne has however, located the species some 6 Km west of the Rainham site, in Barking, on land formerly managed as an ecology park. I have not seen this specimen, but there is no reason to doubt his identification. Again, the species was taken here in association with *Phragmites*.

Combining Ian Wynne's observations with my own, the Rainham colony would appear to have comprised some 70 to 80 individuals during 1985. The ratio of the sexes appears to have been in the order of one male to four females, which is itself of interest. A number of other hoverfly species were noted at the Rainham site, notably, *A. lineata* (Fabr.), and *A. transfuga* (Linn.) in reasonable quantity, along with *A. contracta* Claussen & Torp sparingly. Among the other genera, *Chrysogaster hirtella* Loew, *Lejogaster metallina* (Fabr.) and *Platycheirus fulviventris* (Macquart) were much in evidence, along with *Parhelophilus versicolor* (Fabr.), *Myathropa florea* (Linn.), *Helophilus pendulus* Linn.) and several common species of *Eristalis*.

My observations on the habits of this species here were limited by the time available for study. It was noted at least between 0800 and 1830 hours, with no apparent peak of activity, although this could be a function of the sunshine during this period. One thing noted in particular was the apparent reluctance of this insect to fly any great distance, with both males and females restricting their flight activity to the cover of the reeds, occasionally venturing just above or around the edge of the plants. Not so *A. lineata*, the males of which were seen patrolling a stretch of riverside some 9 or 10 metres in length, always returning to the same resting place at regular intervals between flights. Females of this latter species were only rarely encountered amongst the reeds with *A. interpuncta*, but females of *A. transfuga* more frequently so.

No doubt there is much that can be learned from both the Erith and Rainham colonies of *A. interpuncta* and it is particularly unfortunate therefore that the latter site is likely to be "developed" for a supermarket store.

Reference

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[The apparent discrepancies between Mr. Plant's observations and my own must, I think, be due to either or (more probably) both of two circumstances: differing conditions at the sites, and weather differences between the two seasons. I have unfortunately not managed to re-visit the Erith site this summer for various reasons, but hope to do so next year. The discovery of *A. interpuncta*

at three separate spots in the Thames marshes within two years tends to show that the species must have been widely overlooked, probably by reason of its extreme localization. — A. A. A.]

CURATÉ'S OVUM. — Mr. A. A. Allen (*Ent. Rec.* 97:69) is indeed correct in his recollection that the late P. B. M. Allan anticipated Lt. Col. W. A. C. Carter (*Ent. Rec.* 96:285) in objecting to the widespread entomological usage of the terms *ovum* and *ova*. Mr. Allan's final thoughts on the matter were included as a sub-chapter, "This matter of eggs," in his posthumous volume, *Leaves from a moth-hunter's notebooks* (1980), which I had the privilege of completing and editing. Mr. Allan also anticipated Lt. Col. Carter's observation about ordering a fried ovum for breakfast; the "Old Moth-Hunter" suggested that "we do not allude to our breakfast dish as 'bacon and ova' nor do we eat a boiled ovum, served in a ovum-cup and eaten with an ovum-spoon. The unsuccessful batsman does not score a 'duck's ovum'; we do not pelt a poor performer with rotten ova. . ." Mr. Allan's last book, which abounds with good humour and wisdom, is still in print and is available from the publisher, E. W. Classey Ltd. — R. S. WILKINSON, 228 Ninth Street, N. E., Washington, C. D. 20002.

THE NUMBER OF SPECIES OF HAWK-MOTH IN GARDENS. — There is growing interest in the butterflies of gardens, so why not the easily-identified and conspicuous hawk-moths as well? B. K. West (*Ent. Rec.* 97: 113-117) records seven species in his garden, which is good, but not as good as the ten species recorded by my brother, John Owen, in his garden near Dymchurch on Romney Marsh, Kent. His list is: *Laothoe populi*, *Smerinthus ocellata*, *Mimas tiliae*, *Sphinx ligustri*, *Deilephila elpenor*, *D. porcellus*, *Acherontia atropos*, *Agrius convolvuli*, *Macroglossum stellatarum*, and *Hyles lineata*, the last four being immigrants.

My experience is that *L. populi*, *S. ocellata*, *M. tiliae* and *D. elpenor* are eventually recorded in most gardens in lowland Britain, and that additional species are to be regarded as something of a bonus, dependent on the proximity of the nearest suitable habitat or on luck in picking up one or more species of immigrant which, in turn, may depend on location as well as on year.

I propose, therefore, to initiate a survey of hawk-moths found in gardens in order to try and ascertain if there are broad geographical patterns. I shall be most interested to receive species lists for gardens from all parts of Britain. Please include years of observation and the exact locality (grid reference, if known), and send details to —: DENIS F. OWEN, 2 Shelford Place, Headington, Oxford OX3 7NW.

SOME RECORDS OF SCOTTISH MICROLEPIDOPTERA

By K. P. BLAND*

The following records of uncommon or under-recorded species of microlepidoptera from Scotland are worthy of note:—

Nepticula assimilella Zeller, 1848. Several empty mines of this species were found in Aspen leaves in Hallyards Castle Wood, Midlothian (O.S.Grid NT/1273; V.c.83) on 27.x.1984. This species is much less frequent in Scotland than the other Aspen-feeding nephticulid, *Ectoedemia argyropeza* (Zell.); this is only the fourth Scottish vice-county from which it has been recorded.

Stigmella basiguttella (Heinemann, 1862). The distribution of this species extends much further north than previously suspected. Prior to 1984, this species was only recorded in Scotland from Dumfriesshire (V.c.72) and Dunbartonshire (V.c.99). On 23.vi.1984 a female *Stigmella basiguttella* was taken flying in the morning sunshine in Dinnet Oakwood SSSI, Aberdeenshire (O.S.Grid NO/4698; V.c.92). Its identity was confirmed by microscopic examination of the genitalia (see Johansson, 1971). Later in the season (10.xi.1984) two vacated mines belonging to this species were found, in oak leaves, just south of Tenandry, Perthshire (O.S.Grid NN/9161; V.c.88). This species thus appears to be quite widespread in Scotland.

Lampronia capitella (Clerck, 1759). The only previous Scottish record for this species was at Ballater in 1955, where the larvae were damaging blackcurrant bushes (Shaw, 1956). After nearly 30 years it has reappeared in its old haunts for on 24.vi.1984 two males were captured flying around a riverside gooseberry bush at Ballater, Aberdeenshire (O.S.Grid NO/3795; V.c.92) by Dr. M. R. Young and M. Harper.

Coleophora argentula (Stephens, 1834). This species was recorded for the first time in Scotland in 1981 (Bland, 1982). Although occasionally searched for in its previous locality and other similar ones, it was not seen again until August 1983 when several imagines were taken at Pettycur, Fife (O.S.Grid NT/2686; V.c.85). Their identity was confirmed by Mr. E. C. Pelham-Clinton. Old larval cases were later found on the dead flower-heads of *Achillea millefolium* L. at two sites in East Lothian (V.c.82), viz. Longniddry foreshore (O.S.Grid NT/4477) on 27.xii.1983 and Gullane foreshore (O.S.Grid NT/4783) on 28.xii.1983, as well as at the original East Lothian locality of Yellowcraigs LNR (on 1.iv.1984).

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Coleophora genistae Stainton, 1857. A third locality for this species in Scotland was found when Dr. R. Knill-Jones and I found larval workings (but no cases) on *Genista anglica* L. and then captured an imago on Muir of Dinnet NNR, Aberdeenshire (O.S. Grid NO/4398; V.c.92) on 24.vi.1984. For details of the other two localities see Bland (1982).

Coleophora lithargyrinella Zeller, 1849. To the single published Scottish record for this species (Bland, 1983) can now be added two further records from widely separated localities. Four larval cases of this species were collected from *Stellaria holostea* L. in Cappercleuch Hazelwood (alias Henderland Bank SSSI), Peebleshire (O.S. Grid NT/3360; V.c.78) on 10.iv.1984. Unfortunately all 4 proved to be parasitized. Also 3 cases identified as this species (identity confirmed by Mr. R. W. Uffen) were found fixed to the base of an oaktree surrounded by *Stellaria* in Milton of Drimmie Wood SSSI, Perthshire (O.S. Grid NO/1651; V.c.89) on 21.v.1983. Again only parasites were reared.

Coleophora lixella Zeller, 1849. Previously only recorded in Scotland from Kincardineshire (V.c.91) (Hulme, Pakner & Young, 1978), the discovery of this species in Fife in 1983 suggests that the species may be more widespread in Eastern Scotland. The small larval cases made from thyme seed-capsules were common at Petycur, Fife (O.S. Grid NT/2686; V.c.85) on 1.iv.1983. The large cases made from a mined grass-blade were present a month later (1.v.1983) but attempts to rear the imago were unsuccessful.

Coleophora milvipennis Zeller, 1839. There appears to be no published records of this birch-feeding species in Scotland so the following two records from Perthshire are of interest. A single male was taken in flight amongst birches on Flanders Moss NR, Perthshire (O.S. Grid NS/6297; V.c.87) on 11.vi.1981 and subsequently identified by Mr. E. C. Pelham-Clinton. Later the same year a single empty larval case, fixed next to a cut-out area in a birch-leaf was found at Craighall Gorge SSSI, Blairgowrie, Perthshire (O.S. Grid NO/1748; V.c.89) on 14.viii.1981. It is probable that this species is more widespread than these few records suggest.

Coleophora virgaureae Stainton, 1857. Previously published records of this species, namely from Kincardineshire (V.c.91) and Orkney (V.c.111), wrongly suggest a coastal distribution for *Coleophora virgaureae* in Scotland. Larval cases of this species have now been found on *Solidago virgaurea* L. in a number of inland habitats such as Fealar Gorge SSSI, E. Perthshire (O.S. Grid NN/9979; V.c.89) on 20.ix.1983 and Beinn Lawers NNR, Mid Perthshire (O.S. Grid NN/

6039;V.c.88) on 1.ix.1984. A single empty case was also found on Golden-rod at Pettycur, Fife (O.S.Grid NT/2686;V.c.85) on 30.x.1984. These records suggest not only a more widespread distribution but also a wide diversity of habitats.

Biselachista trapeziella (Stainton, 1849). Not previously recorded from Scotland, this species has now been reared from two different localities in Midlothian (V.c.83). A larva mining *Luzula sylvatica* (Huds.) Gaudin. near Arniston Mains (O.S.Grid NT/3360) on 9.iv.1984, pupated on 19.iv.1984 and produced an imago on 22.v.1984; while a larva mining *Luzula pilosa* (L.) Willd. at Maggie Bowies Glen (O.S.Grid NT/3860) on 31.v.1984, pupated on 4.vi.1984 and emerged at some time between 25.vi and 20.vii.1984. It is difficult to decide whether this data suggests a single protracted generation or two successive ones.

Agonopterix yeatiana (Fabricius, 1781). A single specimen of this uncommon species came to a battery-operated M.V. light-trap at Mount Lothian Marsh, Midlothian (O.S.Grid NT/2757; V.c.83) on the night 26/27.viii.1984. Widely distributed along the west coast of Scotland this is the first record of it from the east. Previously the most easterly Scottish record was Aberfoyle (Christie & Christie, 1982).

Anacamptis temerella (Lienig & Zeller, 1846). Several specimens of this rare gelechiid were reared from pupae in spun shoots of *Salix repens* L. collected on 25.vii.1984 on the coast near Cornaigbeg, Isle of Coll (O.S.Grid NM/2363;V.c.103). The imagines emerged between 27 and 31.vii.1984. This appears to be the first record of this species north of the Border.

Acknowledgements

I am very grateful to Mr. E. C. Pelham-Clinton and Mr. R. W. Uffen for assistance with identification and to Dr. M. R. Shaw of the Royal Scottish Museum for allowing liberal use of the Scottish Insect Records Index. I am also grateful to Dr. R. Smith of the Nature Conservancy Council for arranging access to some of the sites.

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PERIBATODES SECUNDARIA D. & S. [LEP. SELIDOSEMIDAE] FEEDING AT RAGWORT. — On the night of August 1st, 1985, I was surprised to find a considerable number of moths feeding at ragwort flowers (*Senecio jacobaea*) in a ride of Orlestone Wood, Kent — surprised because ragwort seems to attract fewer moths than formerly, and also this plant is not common in the rides of these woods. The flowers had attracted vast numbers of the small Pyralid *Endotricha flammealis* Schiff. and about a score each of *P. secundaria* and *Miltochrista miniata* Forst. on two patches of ragwort each of a dozen or so plants, compared with only two or three of each species at an m.v. light in an adjacent ride. Other species at these flowers were *Eilema lurideola* Zinck., *E. deplana* Esp., *Cabera pusaria* L., *Apamea scolopacina* Esp., *Mesapamea secalis* L. and *Idaea biselata* Hufn., and singletons of *P. rhomboidaria* Schiff., *Semiothisa liturata* Clerck f. *nigrofulvata* Collins, *Noctua janthina* Esp. and *Mythimna impura* Hubn. Nearby patches of wood sage, rose-bay willowherb, knapweed, hogweed, thistles and rushes in flower were devoid of macrolepidoptera. I can find no previous reference to *secundaria* feeding at flowers in this country. B. K. WEST, 36 Briar Road, Bexley, Kent.

MACROGLOSSUM STELLATARUM L. (HUMMING-BIRD HAWK-MOTH) IN DEVON — Single sightings of this moth at the north end of Slapton Sands, Devon, were made on 25 July, 21 August, 1 and 10 September 1985, at valerian flowers. The moth observed on 21 August laid two eggs on the seed head of valerian — one failing to hatch, and the other hatching after only 78 hours. H. L. O'HEFFERNAN, 24 Green Park Way, Chillington, Devon TQ7 2HY.

AROUND RANNOCH:AUGUST 1985

By J. M. CHALMERS-HUNT* and R. G. CHATELAIN**

In spite of the pathetic season, we decided to motor up to the Highlands in the hope that the weather was at last due to improve. We were wrong. We arrived at Kinloch Rannoch on the morning of Monday, 19th August where we had booked accommodation with Mrs. Baxter at Glenrannoch House. This is an establishment we can thoroughly recommend as ideal for visiting entomologists. The food is plentiful and good, the terms moderate and the Baxters do all they can to make one's stay enjoyable. The village also meets all one's needs with reasonable real ale in the Dunalastair Hotel and bar meals in the Bunrannoch.

That evening, we set up the lights on the south side of the loch in the woods at Kilvecht. This was to be the only good night during our stay with a temperature of 12°C at midnight. Fifty-two species of macro and 23 of micro attended the lights including *Entephria caesiata* D. & S., *Carsia sororiata* Hbn., *Epione repandaria* Hufn., *Colostygia olivata* D. & S., *Alcis jubata* Thunb., *Apamea exulis* ssp. *assimilis* Doubleday, *Syngrapha interrogationis* L, *Stilbia anomala* Haw., and *Eugnorisma depuncta* L. Among the micros were *Exoteleia dodacella* L, *Yponomeuta evonymella* L, a bright and well-marked form of *Zeiraphera diniana* Guen., and a lovely extreme ab *brunneana* Sheldon of *Epinotia brunnichana* L.

The next day, the weather clamped down with a vengeance and we decided that it would be useless to undertake any collecting but on Wednesday, 21st August, things were a little better and we drove the 80 odd miles to Loch Arkaig in the hope that, in a late season, *Perizoma taeniata* Steph. might be hanging on. Attempts to flush out the beast by day resulted only in a few *C. olivata* and *P. didymata* but it was interesting to see *Erebia aethiops* Esp. flying in heavy showers. It rained intermittently that night but among 42 species of macro logged, we were pleased to see 15 *P. taeniata*, three of which were females. These have laid but it is a difficult moth to rear and advice would be welcomed. Other visitors included *Venusia cambrica* Curtis, *Mythimna impura* ssp. *scotica* Cockayne, *Enargia paleacea* Esper and *Celaena leucostigma* ssp. *scotica* Cockayne; and, among the micros, *Catoptria margaritella* D. & S., *Zeiraphera ratzeburgiana* Ratz., and *Y. evonymella* L.

On the nights of 23rd and 24th August, we worked the moors near Trinafour but were obliged by the strong wind to abandon the most likely spot overlooking the village in favour of a sheltered location lower down the hill. On the first night, it only rained but on the second it came down in the proverbial stair-rops. Neverthe-

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less, the moths swarmed at light, including one each of *Autographa bractea* D. & S., *Aporophyla luneburgensis* Frey., and *Lithomoia solidaginis* Hubn. *Xestia agathina* Duponchel, *X. castanea* Esper and *Paradiarsia glareosa* Esper came in small numbers, accompanied by hoardes of *Diarsia dahlia* Hbn, a species common throughout our stay.

The last night of our visit looked more promising when we set up in the woods near Kilvecht but a chilly wind soon put paid to our hopes and little of note was seen. Day work was virtually impossible but we did find commonly larvae of *Clostera pigra* Hufn., spun up in the sallow and a number of yet unidentified micro larvae on bog myrtle at Trinafour (one of which has since produced a moth of *Acleris maccana* Treits.) In all, a pleasant trip, entomologically rather disappointing but made enjoyable by the magnificent scenery and pleasant accommodation.

SYNDYAS NIGRIPES ZETTERSTEDT (DIPTERA : HYBOTIDAE)
IN SOMERSET — During the late afternoon of 5 July 1985 I visited Shapwick Heath National Nature Reserve and sampled Diptera by sweeping the field layer peatland vegetation and the foliage of some carr (mainly alder) within the meadow at grid ref. ST 440 393. Amongst the Empidoidea from this locality identified during the course of the evening was a single female *Syndyas nigripes* Zett., a species hitherto known in Britain only from a bog in the Mark Ash Enclosure of the New Forest, Hants. (Collin, 1961, Empididae, *British Flies* 6:234-235, Cambridge University Press) where it was found by E. A. Fonseca, J. Cowley and J. E. Collin in July 1954. There have been no subsequent British records that I am aware of, so it is particularly pleasing that Collin's guarded prediction ("may well be found elsewhere in Great Britain" p. 235 *op. cit.*) has at last been fulfilled — DR. I. F. G. MCLEAN, Nature Conservancy Council, Northminster House, Peterborough PE1 1UA.

CHRYSOIDEIXIS CHALCITES ESP. (GOLDEN TWIN-SPOT) IN DORSET — a male of this immigrant species came to my garden m.v. on the night of 9th September, and was found sitting on a door frame near the trap at dawn. This is a new record for VC10. The night was warm with light variable wind, and total cloud cover. Together with other entomologists, a number of lights were run on my local cliffs on the 10th, and then at Portland on the 11th. Apart from a small number of *Autographa gamma* there were no signs of other immigrant species. E. H. WILD, 7 Abbots Close, Highcliffe, Christchurch, Dorset.

THE EARLY STAGES OF *DIACHRYSLA ORICHALCEA*
(FABRICIUS)

By D. G. SEVASTOPULO, F.R.E.S.*

I was interested in Messrs. David Brown & Andrew Gardner's account of the breeding of this species from a U.K. caught female (*Ent. Rec.*, 96 : 220-1) as their larvae, and particularly their pupae, shewed considerable differences from those I reared in India (1947, *Journ. Bomb. Nat. Hist. Soc.*, 47 : 38) and Mombasa (unpublished).

I described the ovum as pale green, a very much flattened spheroid, with numerous raised ribs radiating from the micropyle.

The newly hatched larva had the head black, not becoming black in the course of the instar, as stated by Messrs. Brown & Gardner, this is virtually impossible as the pharate head is developed *behind* the old head capsule and not *within* it. The head in the second and third instars is yellow brown, finally becoming green in the last (fifth) instar.

My actual description of Mombasa larvae was as follows:

1st instar — Head black. Body when first hatched colourless and transparent, becoming green after feeding. Clothed with short, colourless setae arising from black points. Legs blackish. 1st and 2nd pairs of prolegs absent.

2nd instar — Head yellow brown. Body similar to preceding instar.

3rd instar — Similar.

4th instar — Head yellowish. Body pale green with a slightly darker green dorsal line and lateral strip, the latter edged with a white line. Setae blackish. The whole body, both dark and light portions, with very fine, longitudinal, wavy white lines.

5th (final) instar — Head greenish. Body pale green, a darker green dorsal line, finely edged with white, a fine white subdorsal line with an indistinct whitish stripe between it and the dorsal stripe. A white lateral line edged above with slightly darker green. A series of black verrucae just above the lateral line emitting colourless setae, other setiferous verrucae white. Spiracles white rimmed with black. Legs black. Venter pale green, prolegs pale green, the first two pairs absent. The larvae vary considerably in the width and depth of colour of the dorsal stripe, and some have all the setiferous verrucae black.

The major difference between Messrs. Brown & Gardner's description and mine is in the pupa. The U.K. pupae are described as dark mahogany brown. My Indian pupae were stated to be dull olive black with the inter-segmental areas dull olivegreen. The Mombasa pupae were green with the thorax dark brown dorsally,

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the abdomen with a dark brown dorsal line and intersegmental dark brown suffusion.

My list of food-plants is enormous:— *Bidens pilosa*, *Cichorium*, *Coreopsis*, *Helianthus*, *Lactuca*, *Zinnia* (Compositae), *Brassica*, *Raphanus* (Cruciferae), *Ipomoea batatas* (Convolvulaceae), *Cupressus lusitanica* (Cupressaceae), *Pelargonium* (Geraniaceae), *Zea mays* (Gramineae), *Linum usitatissimum* (Linaceae), *Gossypium* (Malvaceae), *Entadraphragma angolense* (meliaceae), *Dalbergia*, *Medicago*, *Phaseolus*, *Pisum sativum*, *Trifolium*, *Vigna* (Papilionaceae), *Phyllopodium* (Scrophulariaceae), *Nicotiana tabacum*, *Solanum* (Solanaceae), *Daucus* (Umbelliferae).

PARASCOTIA FULIGINARIA L. (WAVED BLACK) IN SOUTH HAMPSHIRE — whilst examining sugar patches by torchlight on 31.7.1985 near Brockenhurst, a single female of this species was netted. I understand that this is the first confirmed record of this species in the New Forest. R. A. MACKINTOSH, 19 Upper Selsdon Road, South Croydon, Surrey.

HALIPLUS APICALIS THOMS. (COL.) IN FRESH WATER IN THE LONDON SUBURBS. — I was pleased and not a little surprised when a solitary *Haliphus* dredged from pond-weed in the Princess of Wales Pond on Blackheath, 14.x.84, turned out to be a male of the above brackish-water species. It must, of course, have been a vagrant, far from its typical saline haunts, which in this instance might have been the marshes on either bank of the Thames considerably farther east; where, on 18.ix.48 in a ditch at Higham, I took a single male *apicalis* amongst other commoner Halipli of the same group (*ruficollis* Deg., *immaculatus* Gerh.). There is, almost certainly, no previous record for the immediate environs of London. — A. A. ALLEN.

CHRYSOLINA BANKSI F. (COL.) IN WEST KENT. — Although the localities given by Fowler (1890, *Col. Brit. Isl.*, 4:304) show this fine *Chrysolina* to have been not uncommon in the south-east in earlier times, it has for long been extremely local in that part of the country, while becoming progressively more frequent towards the west. In the former area I have met with it only in the well-known South Essex locality, Mucking Marsh near Stanford-le-Hope, under clumps of black horehound (*Ballota nigra* L.). It is of interest therefore to publish a relatively recent find in West Kent — Wilmington, near Dartford — where Mr. J. M. Chalmers-Hunt took it on the latter plant in 1976. Dartford is one of the localities mentioned by Fowler (*l.c.* & VCH list for Kent), and it was taken there by the late E.C. Bedwell in the 1910s or thereabouts. — A. A. ALLEN.

NOTES ON *SCOLOPOSTETHUS PUBERULUS*
HORVATH AND *LIMNOPORUS RUFOSCUTELLATUS*
(LATREILLE) (HEMIPTERA) IN IRELAND

By J. P. O'CONNOR*

Scolopostethus puberulus Horvath

Recently I discovered two Irish specimens of the lygaeid *Scolopostethus puberulus* Horvath preserved in the J. N. Halbert Collection of Irish Hemiptera in the National Museum of Ireland. They are labelled in Halbert's hand "Curracloe 17.6.'36. J. N. H." and "*S. puberulus* Horv". There is also a determination label stating "*puberulus* Hor det. W. E. China 1936". Fortunately many of Halbert's manuscripts, notes etc. have survived and these include a letter dated 18 December 1936 from China (British Museum (Natural History)) who commented "The *Scolopostethus* species from Curracloe is *S. puberulus* Horv. as you surmised". Halbert's (1935) list of the Irish Hemiptera predates this find and the record appears therefore to be unpublished. The author's copy of the list is annotated by him and it noted that the material was collected under rushes at Curracloe marsh. The right antenna of one specimen is abnormal (Fig. 1).

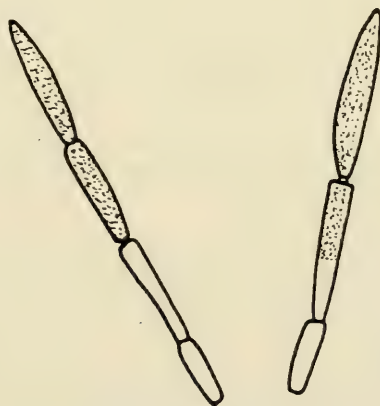


Fig. 1. The antennae of the abnormal specimen of *Scolopostethus puberulus* Horvath.

Curracloe marsh is situated in Co. Wexford (T 113270) and a description of it will be found in O'Connor and O'Connor (1983). These authors added the sawfly *Calameuta pallipes* (Klug) to the Irish list from there and noted that in 1982 the marsh was being drained. A visit in 1984 revealed that much of the marsh had been destroyed by drainage. It is not known if the population of *S. puberulus* has been affected.

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S. puberulus is an interesting addition to the Irish fauna. In Great Britain, with the exception of an odd specimen once found in the Scottish Highlands, it is largely confined to East Anglia and the coastal counties from Kent to Cornwall. There are a few records from Glos., Oxon., Surrey, Berks. and Somerset. Damp mosses, vegetation at the foot of cliffs and moss on chalk downs are amongst its habitats. The presence of the insect in East Anglia suggests that it prefers low-lying, perhaps, marshy places (Southwood and Leston, 1959).

***Limnoporus rufoscutellatus* (Latreille)**

Although found throughout the Palaearctic, *Limnoporus rufoscutellatus* (Latreille) is scarce in western Europe. Southwood and Leston (1959) knew of only 15 records of macropters taken in the British Isles and these had been collected over some ninety years. The specimens had been found between March and early June. No nymphs had been obtained and no captures made of more than two individuals at a time. Most records were in Kent or Norfolk. These authors suggested therefore that the species was a migrant in the British Isles and that it was unable to establish itself.

Halbert (1935) reported three Irish specimens; two of which are unlocalised individuals taken by A. H. Haliday in the nineteenth century. The third one was captured by E. F. Bullock in a bog-pool close to Lough Guitane, Killarney, Co. Kerry, on 23 April 1929. Halbert suggested that this site might be the very place that Haliday found his specimens. On 23 September 1960, a fourth Irish specimen was taken from a lake in Co. Clare. Lansbury (1961) stated that it may have been an arrival from the continent but since it is the first occurrence in late September in the British Isles, the species possibly breeds in western Ireland.

In view of this gerrid's rarity I was surprised to find fifteen previously unreported specimens in the Halbert and Bullock Collections in the museum. Thirteen were taken at Cahernane, Killarney, Co. Kerry in September 1938. An annotation in Halbert's list states that several specimens were found, at Cahernane by Bullock, running very actively on the surface of a dyke flowing into Lough Leane (one of the Killarney Lakes) on 11 September 1938. A further two specimens in the Bullock Collection are labelled respectively "Ballast Killarney 9.47 E.F.B." and "Flesk Killarney 9.58 E.F.B."

Leston (1956) suggested that Holland was a probable source of the specimens immigrating into Britain. He considered that all the bugs were of the previous year and reached these islands from a pre- or post-hibernation flight. However on the basis of the capture of the September specimen in Clare, Lansbury (1961) stated that Leston's hypothesis was not proven. The discovery of the Killarney material strongly supports Lansbury's theory that *L. rufoscutellatus*

is breeding in Ireland. I suspect that Bullock stopped collecting the species because he had sufficient specimens and ran out of space in which to store them. There are two instances where specimens were mounted one above the other on the same pin. Certainly, the south-west of Ireland warrants an intensive search for breeding populations of *L. rufoscutellatus*.

Acknowledgements

I am very grateful to W. R. Dolling, P. Harding and B. Eversham for their assistance with this paper.

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Current Literature

Hawk-moths of the British Isles by Michael Easterbrook. 24pp. 26 colour, 6 bw illustrations. 3 figs. Wrappers. Shire Publications Ltd. £1.25.

This little booklet provides a general introduction to the British hawk-moths. After a brief treatment of the general biology of the Sphingidae, each of the 17 resident and immigrant species is considered in terms of its distribution, foodplants, larva and other interesting features. The book concludes with a brief outline of methods of study and breeding techniques.

It is perhaps inevitable that such a concise treatment of a group of insects will result in omissions and generalisations. Whilst the reviewer would challenge one or two points of detail, the overall impression is of an informative and readable text. The photographic illustrations are mainly of living insects and, whilst not comprehensive, are of very high standard. The sheer number of colour illustrations in a book of this price makes it very good value indeed. P.A.S.

An Atlas of the Water Beetles of Northumberland and Durham.
By M. D. Eyre, S. G. Ball and G. N. Foster. 11½" x 8", typeset, comb binding, stiff paper covers, 66 pp. Northumberland Biological Research Centre Special Publication no. 1, 1985. Obtainable at £2 post free from the Hancock Museum, Barras Bridge, Newcastle-upon-Tyne, NE2 4PT.

This is much the most exhaustive and important publication on the aquatic Coleoptera of the above region since the pioneer work of Hardy and Bold in the latter half of last century, being the outcome of a large amount of both collation from the literature and original investigation. The families covered are all those of the Hydradeephaga except the Hygrobiidae (unrepresented in the area), of the Palpicornia except Sphaeridiinae, plus the Heteroceridae (water beetles by courtesy only!), Dryopidae, and Elmidae. An introductory page describes the topography of the area and its aquatic habitats, whilst a further two set forth the sources of records and explain the system used for the maps. Of these latter, the first two (whole-page) show general features and geology respectively; a third shows density both of species numbers and of occurrences in terms of national grid squares, but for the 90 individual distribution maps (two to a page) the unit employed is the tetrad. The area comprises three Watsonian vice-counties.

A list of the species (8 pp.) serves as an index to the maps and gives distribution by tetrads of the species not mapped, together with notes on records and habitats, so that all species are covered. The distribution maps follow (45 pp.), all species recorded from ten or more tetrads being mapped, and under each map is a useful habitat-note; pre- and post-1950 records are distinguished throughout. A copious bibliography concludes the whole.

Very little can be said in criticism. It would have been more convenient for frequent reference had the maps on opposite pages been printed the same way up, instead of inverted with respect to each other. There are a few minor spelling or typing errors such as 'seperated' (p. 1) and 'relevent' (pp. 4, 8).

The region under notice now appears one of the best documented in the country for water beetles, even if parts of it are still underworked. A great deal of labour has gone into making this Atlas a work of lasting value, and its authors are to be commended on their industry. — A. A. A.

Notes and Observations

EUSTROTIA BANKIANA F. (THE SILVER BARRED) IN HAMPSHIRE
— I have identified a specimen of *bankiana* from the contents of a Rothamsted trap sited at Denny Lodge, New Forest on the night of 4th July 1985. L. J. L. TILLOTSON, Chief Warden, NCC Dyfed Powys Region.

A NEW TECHNIQUE OF SUGARING – While in Denmark in the spring of 1985, I was shown a sugaring technique that was new to me and might be of interest to readers of the Record:

Some ordinary clothes line is cut into lengths of about 3 metres which are boiled in soapy water to remove tars and thoroughly rinsed in clean water. They are placed in a large plastic bucket with a lid and over them is poured a saturated solution of table sugar in a bottle of cheap red wine. Before use, the contents of the bucket (with the lid firmly in place!) are thoroughly shaken to moisten the ropes with the mixture. The ropes are taken out one by one and hung across the branches of suitable trees and bushes upwind of the area to be pervaded by the odour. The idea is that each source emits odour on a much broader front than does the traditional streak of black treacle on a tree trunk, though of course fewer baits are laid. The moths which are attracted are easy to box, being strung out indeed like washing on a line. We found in Denmark that a good ten times as many specimens came to these sugar ropes than to normal sugar patches. The technique was used again this summer in France and Spain, in conditions one would not regard as ideal for sugaring. Nonetheless, there was a good attendance which included several species which do not seem to come to 'conventional' sugar. Thus I had *Deilephila elpenor* Linn. (large elephant hawk), *Plusia festucae* Linn. (gold spot), *Autographa gamma* Linn. (silver Y), *Abrostola* sp. (spectacle), *Herminia tarsicrinalis* Knoch (shaded fanfoot), *Hypena proboscidalis* Linn. (snout) and several species of Geometridae and Pyralidae as well as 'heart-stoppers' such as *Catocala electa* Vieweg (rosy underwing) and *Trachea atriplicis* Linn. (orache moth).

A further advantage is the economy of the technique. At the end of each session the ropes are gathered back into their container and can be used again and again, with occasional reinforcement with a little wine. It is a messy business, though, and one needs a handy stream or a box of 'Wet Ones' to remove stickiness. B. GOATER, 22 Reddings Avenue, Bushey, Herts, WD2 3PB.

BLASTOBASIS LIGNEA WALS. IN NOVEMBER. – On the night of 7.xi.84, a small moth flying in my kitchen proved most unexpectedly to be a fresh example of the above species (abundant here at light during August, the only month given for the imago in our literature). The fact that its congener, *B. decolorella* Woll. – formerly very rare but now likewise common here (S. E. London) – is double-brooded, with its second brood lasting into November, leads one to wonder whether *B. lignea* might not occasionally follow a similar pattern and produce a very small second brood. (That of *decolorella*, I may add, is here very much smaller than the first, and in fact I have seen but few of these late specimens.) The weather at the time was unseasonably mild. – A. A. ALLEN.

RARER MOTH SPECIES AT BARCALDINE, ARGYLL, IN 1982-1984. — This note reports some of the less common species of Macrolepidoptera recorded in 1982-1984 at a Robinson 125-watt m.v. light trap which was run almost nightly during the spring, summer and autumn of the years 1980-1984. Some species are common in southern Britain but apparently scarce or local here and these are recorded for that reason. All were single specimens, except where numbers are given in brackets. These are numbers recorded in the stated year and in each subsequent year up to 1984. The site at Barcaldine (Argyll) is at map reference NM 964414.

Recorded in 1982 but not in 1980-81: *Tethea* or *D. & S.*, *Idaea straminata* Borkh., *Hydriomena ruberata* Freyer, *Perizoma bifaciata* Haw., *Ourapteryx sambucaria* L. (1,0,1), *Ematurga atomaria* L. (2), *Orgyia antiqua* L., *Nudaria mundana* L. (2,2,1), *Euxoa cursoria* Hufn., *Agrotis segetum* D. & S. (1,2,0), *Paradiarsia sobrina* Dup., *Mythimna conigera* D. & S., *M. pallens* L., *M. unipuncta* Haw. (2,0,1), *Craniophora ligustri* D. & S. (3,2,6), *Thalpophila matura* Hufn., *Luperina testacea* D. & S. (2,0,3), *Rhizedra lutosa* Hubn. (1,1,9).

Recorded in 1983 but not in 1980-82: *Cyclophora albipunctata* Hufn., *Rhodometra sacraria* L. (2), *Eulithis prunata* L., *Chloroclystis rectangulata* L., *Eilema lurideola* Zincken, *Polia hepatica* Clerck, *Cucullia umbratica* L. (2,1), *Xylena exsoleta* L. (2), *Acronicta leporina* L. (1, 1), *Mormo maura* L., *Apamea unanimitis* Hubn. (1,3), *Nycteola revayana* Scop. (2,0).

Recorded in 1984 but not in 1980-83: *Perizoma blandiata* D. & S. (2), *Lobophora halterata* Hufn., *Semiothisa clathrata* L., *Clostera pigra* Hufn., *Phragmatobia fuliginosa* L. (2), *Mamestra brassicae* L., *Lacanobia contigua* D. & S.

The following species have been recorded previously (1980/81) at this site but are scarce. Numbers in brackets are numbers of specimens in 1982-83-84. *Plemyria rubiginata* D. & S. (3,0,0), *Colostygia olivata* D. & S. (0,1,0), *Perizoma taeniatum* Stephens (4,3,2), *Carsia sororiata* Hubn. (0,0,1), *Trichopteryx polycommata* D. & S. (1,3,5), *Abraxas grossulariata* L. (0,0,1), *A. sylvatica* Scop. (2,3,0), *Semiothisa notata* L. (1,2,3), *Cleora cinctaria* D. & S. (0,1,0), *Cleorodes lichenaria* Hufn. (3,2,5), *Dyscia fagaria* Thunb. (5,2,1), *Setina irrorella* L. (0,4,2), *Xestia rhomboidea* Esper (0,0,2), *X. agathina* Dup. (0,4,1), *Eurois occulta* L. (20,2,1), *Panolis flammea* D. & S. (1,1,0), *Lithomoia solidaginis* Hubn. (2,6,0), *Acronicta menyanthidis* Esper (2,2,1), *Apamea exulis* Lefebvre (5,6,4), *A. ophiogramma* Esper (0,0,5), *Eustrotia uncula* Clerck (0,2,0).

The following corrections should be made to the previous list from this site (*Ent. Rec.* 1982, 94: 243-244):

Delete *E. flavicinctata* Hubn.

For *P. bombycina* Hufn. read *Lacanobia biren* Goeze.

For *A. tridens* D. & S. read *A. psi* L.

For *B. prasinana* L. read *Pseudoips fagana britannica* Warren.

I am indebted to E. C. Pelham-Clinton for confirming the identities of most of the above species, and to I. C. Christie for advice and encouragement. J. C. A. CRAIK, Marine Laboratory, P. O. Box 3, Oban, Argyll.

TEMPERATURES ASSOCIATED WITH THE BLUE BUTTERFLY AT MALVERN IN JANUARY 1983. — Further to the mention by Dr. C. J. Luckens in *Ent. Rec.* **96**: 237-242, the blue butterfly was disturbed from a pile of logs by a Mrs. K. Edwards on January 8th. The logs were near to mature holly trees, and with plenty of ivy in the area it seemed probable that it was *C. argiolus* Linn, a holly blue. Observations since support this assumption because this species is often plentiful there, eg. the second brood in 1984.

Through the kindness of Mr. Frank Hill of the Meteorological Office Radar Research Station at Malvern, I receive detailed information of local climatic conditions, therefore I have been able to study daily records for the period before the sighting. Mr. Hill considers that the location of Mrs. Edwards' garden is such that temperatures there should be similar to those at the recording site which is about 1½ miles away. The records show that maximum shade temperatures reached 59°F on December 15th, 54° on the 19th, and there was a warm period over Christmas from 24th to 27th. Then there was a most exceptional warm period in early January when temperatures reached levels normally associated with late April, as follows:—

Date January 1983	1	2	3	4	5	6	7
24 Hr maximum °C	10.2	11.8	12.2	13.9	14.4	11.7	7.8
minimum °C	7.0	4.5	6.0	8.8	6.4	11.1	4.0

Long term averages for early January:— day maximum 6.5°C
 night minimum 2.1°C

Maximum temperatures far exceeded the normal maximum, reaching a record 14.4°C (58°F approx) on the 5th. Furthermore on three nights even the lowest temperature exceeded the normal maximum daily temperature for early January. Understandably these high temperatures coincided with a low pressure period and there was much cloud and rain, however there were some periods of sunshine, notably three hours on the 5th.

Mr. Hill also analysed local records from 1955 to 1985 for the first 7 days of January, and found that 1983 was the warmest on all three criteria of highest maximum, highest mean and highest minimum. Interestingly, a rank order plot showed that the next warmest years were 1975 and 1976; also 1979 and 1963 were the coldest.

The studies by H. C. Gunton over the period 1919 to 1937 provided a reference work on the factors influencing emergence dates for macrolepidoptera. (Gunton, H. C. 1938. *Nature Study Above and Below the Surface*. London. Publisher H. S. & G. Witherby.) One of his conclusions was:— “— From a careful examination of the records of different years it appears that while, in the absence of exceptional drought, excess temperature is the principal factor in producing earliness, the maximum degree of earliness is often found to occur during a warm period which coincides with, or follows shortly after, a wet period.” Another was:— “—Early emergences depend on the occurrence of a warm period within a certain time distance in advance of the normal date for appearance.” *Argiolus* was one of 50 species he studied and his normal date was 30th. April; his earliest date was 2nd. April, but “time distance” was not quantified. Perhaps a month or 5 weeks would seem appropriate? (I once saw *argiolus* at Malvern in late March).

Thus the ‘Malvern blue’ in January 1983 conformed with Gunton’s deductions apart perhaps from the extreme earliness. However, since a holly blue of a third brood is occasionally seen in a warm October — which would normally remain in the pupa state until the following spring — it is foreseeable that a most exceptional warm period during the winter months might stimulate emergence. I should be interested to learn of any records for the months November — February, in order to further study the meteorological factor.

My grateful thanks to Mr. Frank Hill for his invaluable help, without which this analysis could not have been made. — J. E. GREEN, 25 Knoll Lane, Poolbrook, Malvern, Worcs, WR14 3JU.

VANESSA CARDUI L. AND HYLES LIVORNICA ESP. IN NORTH AFRICA, APRIL 1985 — Further to the article by P. A. Davey (*Ent. Rec.* 97: 165-167) on the immigration of the above species in 1985, the following observations may be of some interest : I was on holiday in Morocco from 4th to 18th April, first in Marrakesh and then Agadir. Both *cardui* and *livornica* were extremely common. On April 5th, and for a few subsequent days, I noted at Marrakesh “. . . clouds and clouds of *cardui* on the waste ground near my hotel . . .” They appeared to be flying S. W., and maintained this movement for several days. The painted lady was also common in Agadir a few days later, but here *livornica* was the dominant species, swarming over flowers in the hotel gardens on 15th April. I noted “. . . lots of striped hawks washed up in the surf on the beach . . .”, and the moth was also abundant around the light outside my room. It is probable that these insects were part of the migration that eventually reached the U. K. D. HALL, Lichfield School, The Palace, Lichfield, Staffs.

THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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PUBLISHED BIMONTHLY

BUTTERFLY DISTRIBUTION IN FIFE & KINROSS — It is hoped to complete 1 km distribution maps by 1990. Please send recent or unpublished records (including date and number for scarce species) to: P. K. KINNEAR, 11 Hill view Road, Balmullo, St. Andrews, Fife KH16 0DR.

CAN YOU HELP? HELL COPPICE/BERNWOOD FOREST — Does anybody have photographs, notebooks etc. relating to Hell Coppice or Bernwood Forest, Bucks. for the first half of this century — up to 1950? I am studying history of this site and would be grateful for any material. Anything relevant would be copied and returned.

RACHEL THOMAS, Biology Department, Oxford Polytechnic, Headington, Oxford OX3 0BP. Tel. (0865) 64777 ext 578.

MICROLEPIDOPTERA OF WILTSHIRE — I am attempting to gather all available information on the distribution of microlepidoptera in Wiltshire, for a future publication. I would be grateful to receive records of all species, with full data. All contributors will be acknowledged. S.M.PALMER, The Warren, Hindon Road, Dinton, Wilts SP3 5EG.

THE GENITALIA OF THE SPECIES PAIR
MESAPAMEA SECALIS (L.) AND
MESAPAMEA SECALELLA REMM,
(LEP.: NOCTUIDAE)

By M. J. R. JORDAN*

These two species were first separated in 1983 by Dr. H. Remm (Remm 1983) in the Estonian SSR of the USSR, on the grounds of the male genitalia. Since then further studies (Fibiger et al. 1984; Agassiz & Goater *pers. comm.*; Jordan 1985) have shown that both species also occur in North Western Europe and Britain, and that separation of the two species on female genitalia may be possible.

The genitalia of these two species have not yet been figured in a British Journal, and this paper seeks to remedy this by describing the main diagnostic characters used to separate *secalis* from *secalella*.

The genitalia of *Mesapamea secalis* (L.)

MALE: The clavus of this species is narrow and heavily chitinated, with many small thorn like projections (figs. 1 and 6). The aedeagus is curved and when the vesica is everted there is a large, broad cornutus which is joined to the vesica along its entire length. There are also many minute cornuti and an ancillary pouch where the everted vesica turns into a narrow tube (fig. 2).

FEMALE: The female genitalia have one major diagnostic character. When viewed from the ventral side the swelling of the ductus bursae faces to the right (fig. 5).

The genitalia of *Mesapamea secalella* Remm.

MALE: In this species the clavus is broad and only lightly chitinated, with scattered fine setae (figs. 3 and 7). The aedeagus is straighter and the large cornutus on the everted vesica is narrow and only joined to it along part of its length. Where the everted vesica turns into a tube there are many cornuti which are very much larger than those of *secalis* (fig. 4).

FEMALE: The distinguishing character is that in this species the swelling of the ductus bursae faces to the left when viewed ventrally (fig. 5).

*School of Biological Sciences, Queen Mary College, Mile End Road, London.



Fig. 1. *Mesapamea secalis*: male genitalia.

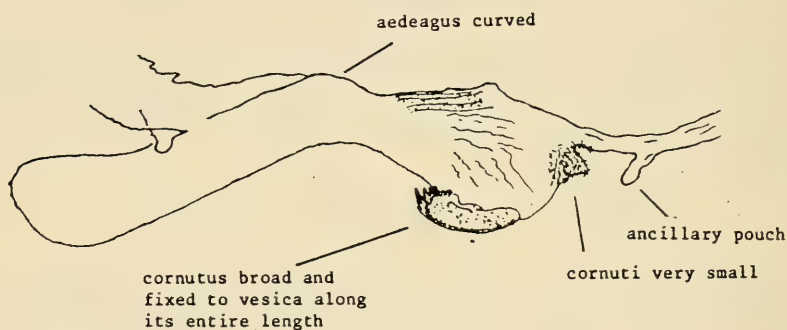


Fig. 2. *Mesapamea secalis*: aedeagus.

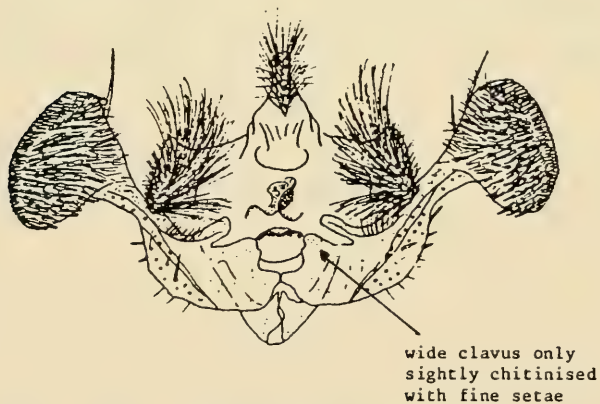


Fig. 3. *Mesapamea secalella*: male genitalia.

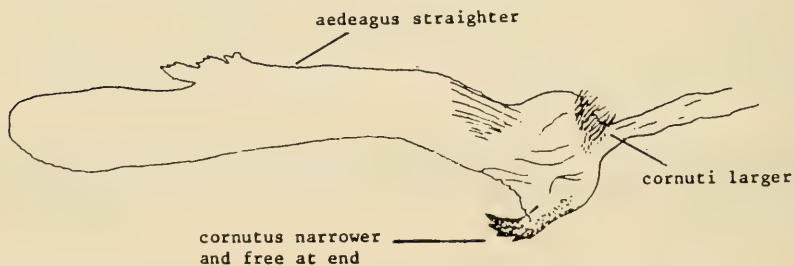


Fig. 4. *Mesapamea secalella*: aedeagus.

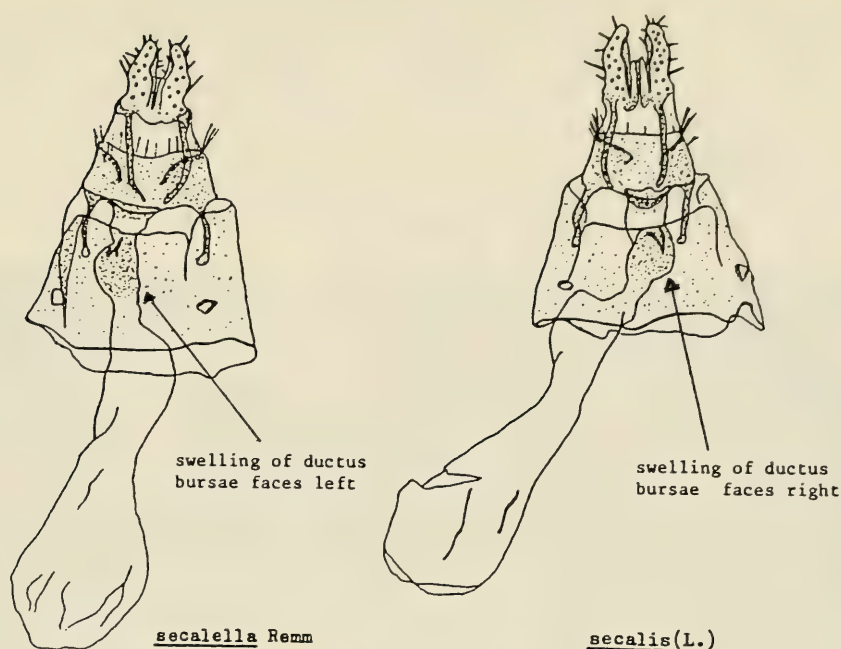


Fig. 5. *Mesapamea secalella* (left) and *secalis* (right): female genitalia.

It must be stressed that at the present time the male and female genitalia described for each species are only linked by frequency and are not confirmed by captive breeding.

In addition four specimens have been found in which the genitalia conform to neither species, but appear to represent an intermediate of the characters of both species. The exact significance of these specimens will hopefully also be clarified by a captive breeding programme.

Acknowledgements

My Thanks are due to D. J. Carter of the British Museum (Natural History), for allowing me access to the RCK coll. and especially to M. R. Honey, also of the British Museum (Natural History), for many useful comments and for checking the manuscript of this paper.

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Jordan, M. J. R., 1985: "A study of the species pair, *Mesapamea secalis* (Linn.) and *Mesapamea secalella* Remm, at Weyhill, Hampshire (VC 12).", Thesis submitted for the degree of BSc., Zoology Dept., Royal Holloway College, University of London. Unpublished.

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Fig. 6. *Mesapamea secalis*: detail of clavus (photograph D. J. L. Agassiz).

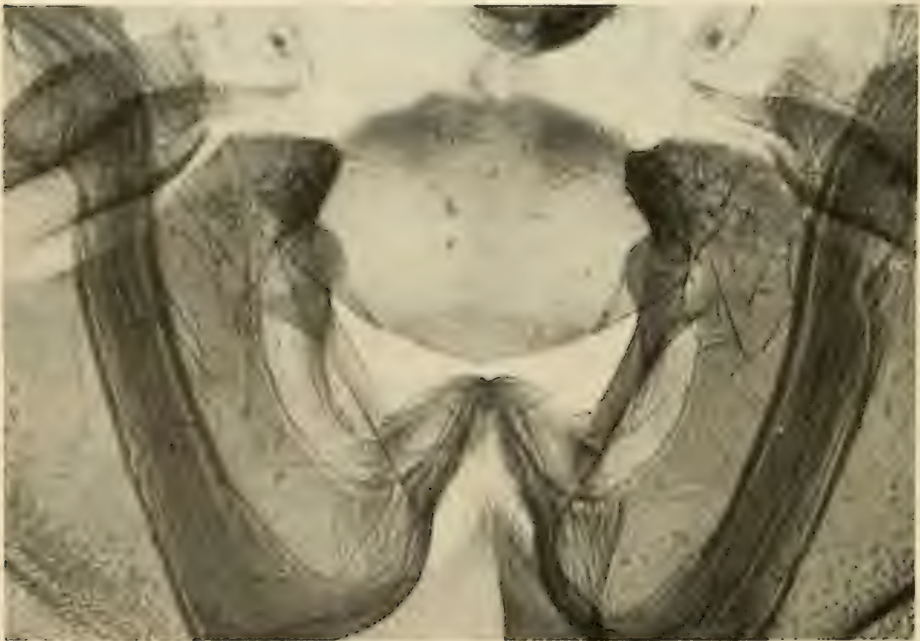


Fig. 7. *Mesapamea secalella*: detail of clavus (photograph D. J. L. Agassiz).

SOME PRACTICAL HINTS FOR TREATING
MESAPAMEA SPECIES

By the Rev. DAVID AGASSIZ*

The structural differences between *M. secalis* and its sister species *M. secalella* are adequately described in Michael Jordan's paper in this issue of the *Record*. Readers will know that it is possible to guess from the wing colouration and pattern which species they are looking at, but they cannot know for certain without examination of the genitalia. This is a deterrent for many amateur lepidopterists because they may not have the facilities for making genitalia preparations, which is also very time consuming. Besides this cabinet specimens without abdomens never look quite as good as complete ones!

I offer these simple techniques which enable males of *Mesapamea* species to be identified quickly and definitely without the need to kill or damage them in any way. They can be applied in the same way to other difficult groups, e.g. *Acronicta psi/tridens*, *Amphipoea* spp. and *Oligia* spp..

The specimen is anaesthetised by placing it in a killing jar charged with ethyl acetate for about a minute, just long enough for it to become unconscious and no longer moving. It is then taken out and placed on the microscope stage or other suitable surface. Magnification between x10 and x30 is ideal. The moth is placed on its back and with one hand, using e.g. curved entomological forceps, gentle downward pressure is exerted on the underside of the abdomen until the genitalia begin to be extruded. Maintaining gentle pressure on the abdomen (which keeps it steady) the valves can then be prised apart with very fine forceps, until all the critical characters can be seen. With *Mesapamea* species the valves need to be spread very wide because the distinguishing shape of the *clavus* is right at the base of the valve. The projecting shape in *M. secalis* is dark brown, in contrast to the hairs and most of the rest of the genitalia.

Once the determination is made the specimen can be released, if only the record is of interest. Moths usually regain consciousness within a few minutes, if they suffer aches in the lower abdomen at least their complaints are inaudible! Specimens to be kept are not damaged if carefully handled.

This examination can be done quickly and easily for recording purposes, and the *secalis/secalella* group with practice can be determined at a rate of 3 or 4 per minute. Unfortunately no such procedure is possible with females since all the structures are internal. Whilst the technique is simplest with a stereoscopic microscope, it should equally be possible with a x20 or x10 hand lens. The only

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difficulty then is that if two hands are needed to manipulate the abdomen it is hard to hold the lens in place!

When specimens of such critical species are set it is always worth arranging the genitalia so that they can be examined without dissection (c.f. *MBGBI* 1: 130). Even if they have been determined it is good to allow further inspection without damage to the specimen. To achieve this it is again necessary to squeeze the abdomen (ventro-dorsally) to force out the genitalia. The valves should then be held open as wide as possible with a pair of pins, when dry the critical parts can then be examined with ease, using either lens or microscope.

NOTE: As yet there are no reliable criteria for separating *secalis* and *secalella* by means of external characters. Both species are illustrated by Skinner (1984) in *Colour identification guide to moths of the British Isles* (plate 38 figs. 1-5), but the text comment on p. 160 of the first printing : "May be separated from the usually slightly smaller *M. secalis*" is erroneous, as *secalis* is generally slightly larger than *secalella*. This error has been corrected in the second printing. Both species appear to be common in suitable habitats throughout the British Isles, and we await with interest further details of the biology of these two species. A recent paper (in Danish) by Michael Fibiger and Poul Svendsen (*Ent. Meddr.* 53:31-38) has half-tone illustrations of a short series of each species as well as photpgraphs of genitalia preparations. *Editor.*

CUCULLIA LYCHNITIS RAMB. (THE STRIPED LYCHNIS) IN WEST SUSSEX — On 26th August 1985 whilst walking a small section of The South Downs Way above Treyford, West Sussex, I came across in excess of twenty five full grown larvae of *C. lychnitis*. Ramb. — the striped lychnis — feeding on two adjacent plants of *Verbascum nigrum*.

Surprisingly C. Pratt (*A History of the Butterfly and Moths of Sussex*) gives only two records for Sussex since 1945 and the distribution map in J. Heath (*The Moths and Butterflies of Great Britain and Ireland*: 10) shows no records for this area despite a suggestion in the accompanying text that it should occur.

Larvae have also been found relatively commonly in the Winchester area of Hampshire this year, thus hopefully a revival in the fortunes of this insect is perhaps indicated. J. W. PHILLIPS, 16 Grove Road, Havant, Hants.

ON THE BRITISH SPECIES OF *MORDELLISTENA*
COSTA (COL.: MORDELLIDAE) RESEMBLING
PARVULA GYLL.

By A. A. ALLEN, B.Sc., A.R.C.S.*

With the publication of Vol. 8 of Freude, Harde & Lohse, *Die Käfer Mitteleuropas* (1969), it became evident that our British representatives of this family would almost certainly prove more numerous than had yet appeared. The object of these notes is to point out that the *Mordellistena parvula* Gyll. of British catalogues and collections comprises more than one species; and further, that others very similar, not yet recorded here, also occur with us. That much was clear from a study of my very scanty material of the group (strictly speaking not a single homogeneous group, as will appear); which, even on a cursory inspection, was readily seen to be composite.

To identify securely each of the four species hitherto found (distinct enough in themselves), among the very large number included in the key by the late Karl Ermisch in the above-named work, was at first a somewhat daunting task. When, however, the key was perused in greater detail and the sectional characters carefully re-checked, it became a simpler exercise. Finally I was fortunate in having the help of Mr. R. Batten in Holland, the successor to Dr. Ermisch as a specialist in the Mordellidae, who was good enough to verify my eventual determinations.

None of these species can be regarded as other than very uncommon with us, except occasionally at a particular spot. They are the smallest known species of the genus in Britain. Usually they occur by sweeping mixed vegetation, and unlike some others of the genus do not appear to patronize flowers much. The plants with which they are specifically associated have, with one exception, not been well ascertained.

The common feature on which it is convenient to group them together for present purposes is a similar facies or general aspect consequent on the coloration, notably of the pubescence. The four species are split down the middle, as it were, by a very definite structural character; the members of each pair are closely allied. Thus, one pair falls into the first section of Ermisch's key with 63 species, the other into the second with only six. (These sections are treated there as subgenera — see below.) The following key will, it is hoped, enable the four species dealt with here to be determined with little trouble:—

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Small to very small species, never entirely deep black (thus contrasting with the *M. pumila* group) but to the naked eye appearing dark olive-brown to somewhat greenish-grey-black with a silky sheen, by reason of the usually shining yellowish pubescence; appendages in part, notably the anterior coxae and femora, base of antennae, palpi and mouthparts (least clearly in ♀ *parvuloides*), and often front of head narrowly, more or less distinctly paler, yellow-brown to rufous; antennae slightly to decidedly (*parvula*) more elongate in male than in female, except in *nanuloides*.

- 1/4 Hind tibiae with an accessory spur barely half the size of the large one, situated ventrally and visible from the side or behind¹ (sg. *Mordellistena* s.str.²). (Length about 2.5-3.3mm.)
- 2/3 Viewed laterally or dorsolaterally, pronotal side-margins in basal half practically straight; hind angles bluntly rounded, obtuse. (Form somewhat variable.) *parvula* Gyll.
- 3/2 Viewed thus, pronotal side-margins in basal half distinctly concave; hind angles well-marked, about 90° or less (Form rather robust.) *parvuloides* Erm.
- 4/1 Hind tibiae without an accessory spur (sg. *Pseudomordellina* Erm.). Pronotal characters as 3/2, very clearly in *acuticollis*, less so in some *nanuloides*.
- 5/6 Antennae long, exceeding combined length of head and pronotum, segments 5-10 about twice as long as broad; size larger, up to fully 3mm. (More slender and elongate than *parvuloides*.) *acuticollis* Schils.
- 6/5 Antennae short, not quite equalling combined length of head and pronotum, segments 5-10 about 1½ times as long as broad; size very small, 2.3-2.8 mm. (Antennae similar in the sexes, unlike *parvula*; head in ♀ entirely black, in ♂ narrowly reddish in front.) *nanuloides* Erm.

Notes on the species

M. parvula (Gyllenhal). — A very distinct species, within its group at once known by the pronotal character given above; its immediate allies include the next. It is indeed surprising that the true *parvula* has so long been confounded with *nanuloides* in Britain (under the former name, of course). Actually, Fowler (1891:73) did distinguish them to some extent, correctly noting the important thoracic difference — other characters he gives appear in part con-

¹The hind legs in these species should always be set, or disposed, in such a way that it can readily be seen whether or not accessory spurs are present.

²Includes all other known British species of the genus apart from the last two above, and *abdominalis* F.

³*M. inaequalis* Muls. is now treated as a good species, known only from France.

fused, at least in the light of present knowledge — yet he still referred all British specimens to '*parvula* v. *inaequalis*'³, and, except that the varietal name has lately been dropped, British authors and catalogues have continued to do likewise.

The foodplant is perhaps often *Artemisia vulgaris* (mugwort), but it seems likely that other plants too are utilized. Of the single specimens I have taken (Broxbourne, Herts.; Arundel, Sussex) one was shaken from *Achillea millefolium* (yarrow), but mugwort was near at hand; in the other case it was not, but yarrow may have been. Possibly, therefore, the last-named is another host. *M. parvula* is scattered thinly about the south-east and south, extending (according to the records I have) westward to Cornwall and northward to Norfolk. Probably all the localities given by Fowler (*l.c.*) except Sheerness, and by Fowler & Donisthorpe (1913:299), apply to this species.

M. parvuloides Ermisch. — On 1st July 1985, I captured a single female by sweeping in oak woodland at Shooters Hill near here (now Oxleas Woods SSSI), very close to the locality for the next species. The actual source of both insects is at present problematic. In the case of *parvuloides* there was little at the spot (which was very shady) but grass, brambles, and oaks. At the time I could only suppose the beetle to be another *acuticollis*, though even in the net it appeared too large and stout. As the exact location was only some 20 yards in from the woodland edge, the possibility of its having strayed from that likelier situation to where it was found cannot be ignored. The host-plant of *parvuloides* seems to be quite unknown. The species is recorded only from the Rhineland, Bavaria, Switzerland, Italy, and Hungary (Ermisch, p.176). It may perhaps be found representing *parvula*, or mixed with that species, in a few collections; or it may be a newcomer to our fauna. This, of course, applies equally to the next species.

The pubescence in my specimen is appreciably a little darker and less shining than in *parvula*, and the mouthparts and antennae considerably darker than appears usual in that species; but whether the latter difference is true of the male also of *parvuloides*, I cannot say.

M. acuticollis Schilsky. — Also found at Shooters Hill (see above), where two examples occurred to me in successive years (20.vii.84, 7.vii.85) by general sweeping on the western fringe of the woods verging on Eltham Common. The first was swept amongst long grass with a few nettles intermixed and some taller vegetation consisting of young trees — hawthorn, birch, oak etc.; the second in a rather more exposed spot about 20 yards distant with shorter grass and little else but a few low docks, nearly under an oak. Ermisch (p.187) notes the beetle as having been swept from *Cirsium arvense*, the common field thistle; I therefore gave this plant special

attention where it grew along the edge of the woods, likewise the flowers of hogweed locally present there, but to no avail. (*Artemisia* is a notable absentee.)

The nearest ally of this species is the following, which however is a maritime or estuarine insect. Now that attention has been drawn to them, *acuticollis* and *parvuloides* will surely turn up in other localities. It goes without saying that any *parvula*-like specimen ought to be subjected to careful scrutiny. *M. acuticollis* is recorded from Austria, Hungary, Steiermark, Switzerland, Slovakia, Bavaria, Württemberg, and the Middle Elbe district (Ermisch, *l.c.*). Southern England is, of course, a notable extension north-westward of the known range of this and the last species.

M. nanuloides Ermisch. — This is the very small *Mordellistena* formerly taken in abundance at times on *Artemisia maritima* at Sheerness on the Isle of Sheppey, Kent, by J. J. Walker, G. C. Champion and probably others, but confused by British authors with '*parvula* v. *inaequalis*' (see under *M. parvula*). Mr. P. M. Hammond (BMNH) suggested to me its true identity at about the time that I had independently come to the same conclusion. All the BMNH material from several British collections appears to be from the above source, and I know of no other locality in this country; though one would expect the species to exist in other maritime or saltmarsh areas where the sea wormwood occurs, especially perhaps on the east coast. On the Continent also the distribution appears very restricted. Ermisch (p.187) notes that *M. nanuloides* was described from the above-named foodplant in Holland, and gives Meissen in Saxony as the only other record. It would be interesting to know whether it is still present on Sheppey. Even if not, it can hardly fail to turn up again somewhere in our area, since alone of the four species considered here the host-plant is not in doubt.

Acknowledgements

I am grateful to Mr. R. Batten (Middelburg) for confirming my determinations, and for other relevant information; and to Mr. P. M. Hammond (London) for helpful discussion, and, as always, for affording me facilities for examining British Museum material.

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CORRIGENDA. Vol. 97, p.137, 1.20 up: for 'Gardener' read 'Gardner'. p.138, 1.21: for the second 'the' read 'that'.

A REVIEW OF BRITISH BUTTERFLIES IN 1984

By Dr. C. J. LUCKENS*

Three good butterfly seasons in a row are most unusual in these troublous times, and 1984 was an exceptional year for many species. Most butterflies showed gains, but there were a few unexpected declines also. Weather patterns were unusual, to say the least. In the south a cold March suddenly flowered into a dry sunny April. The eastern counties remained cold and less favourable at this time, but throughout the rest of southern and western England there were very early emergences and unprecedented numbers of spring butterflies. May and early June were both a little disappointing but after June 5th the weather remained generally very good until the end of the summer. The northern half of Britain shared in this excellent weather and Scotland had its driest warmest summer for several decades.

The glorious April weather in southern England brought out most of the hibernators in good numbers (especially *Gonepteryx rhamni*) but *Polygonia C-album* L. was rather scarcer than usual. By mid April *Anthocharis cardamines* L. and *Celestrina argiolus* L. started to emerge and thereafter produced exceptional numbers throughout their range. There were also good numbers of *Pararge aegeria* L. at this time in our south Hampshire garden, but elsewhere, in the south at least, reports seemed to indicate that it was scarcer than usual in the spring broods. Average numbers appeared in the summer broods, though none were recorded from the usual sites in Easter Ross. In coastal Argyll I saw several single examples in Appin, Benderloch and along the north shore of Loch Etive.

Lasiommata megera L. also produced a small first brood in most areas and a somewhat better summer brood. In west Sussex this seemed confined mainly to downland sites. *Megera* appears to be continuing its spread in Northumberland, where in the 1970's it was scarce, and is now widespread and numerous along the Tyne valley and spreading west and north year by year. Another scarce Satyrid in the north-eastern Highlands this year was *Erebia aethiops* Esp, and this after abundance during the three previous seasons. We found this butterfly widespread and common in central Argyll, however, with heavy concentrations in some sites in Appin, Benderloch and on the Isle of Seil. *Maniola jurtina* L. had another good year. It did better at Portland than for several past seasons, and was recorded as abundant (but slightly down in numbers from 1983) in north Dorset. In Scotland it had an extended season and one was recorded on Buddleia at Muir of Ord on 20th/21st August. It was fairly common throughout Easter and Wester Ross,

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and I recorded a few worn specimens flying on the Isle of Seil, Argyll, on August 18th.

Pyronia tithonus L. appeared in enormous numbers in this area of south Hampshire and this seems to have been reflected throughout its range in the south.

Melanaergia galathea L. also had a very good season generally, though numbers were again rather low in some of its former strongholds in west Sussex. Another success story concerned *Hipparchia semele* L. Portland produced a very good showing of this butterfly with several of the usual vars taken with obsolete or reduced spotting. It was also recorded in several sites not previously noted in North Dorset and was not uncommon near Corfe Castle. The New Forest heathland produced smaller numbers than usual, but in one of its normally sparse colonies on the east Sussex Downs near Alfriston, 60 were recorded in one day. New localities for the Grayling were found at Gruinard Bay in Wester Ross (at an early date for this species in Scotland — July 2nd) and we recorded one or two specimens on the north shore of Loch Etive, Argyll during late August. Numbers of *Aphantopus hyperantus* L. were reported as average in north Dorset and down in some areas of Hampshire but it was encouraging to hear of an increase in the New Forest after several seasons of scarcity. It also appeared abundantly near Cressage in Shropshire. Tim Melling, who worked extensively on *Coenonympha tullia* Mull. in 1984, sent a useful report of his activities and the welcome news that one Northumberland colony was estimated at well over 1,000 specimens on July 7th. Seventy different bogland localities were detected in the county in that year. On Thorne Waste in Yorkshire he was able to find 60 larvae in May within a 100-yard square. In spite of major fires at Whixall Moss, Shropshire early in the year, *tullia* also had a reasonable season there.

An interesting report regarding *Eurodryas aurinia* Rott. came from Wiltshire where larvae were found in late April near Tilshead, feeding naturally on *Dipsacus*, wild teasle. It appears to have been an excellent year for this local species in both south Wiltshire and north Dorset — especially at Hod Hill and Bratton Castle. The isolated Worcester colony had a real population explosion. Here the first *aurinia* was seen on May 14th, and by June 7th the butterfly was in its thousands. There was some evidence of spread to neighbouring areas also. This was not the earliest emergence date however, as it was seen near Street in Somerset on May 13th, and in this same county the butterfly continued for nearly a month, as several were recorded at Charterhouse on June 10th. Several records also appeared from the woods on the Surrey/Sussex border. There was a single record from Sedgheurst Wood and large numbers were noted at Botany Bay near Chiddingfold. I visited this latter site

in mid-August and found larval webs in prodigious numbers along a fifty yard stretch of woodland ride. It would be very interesting to know if this is the result of introduction or of natural colonisation. There were also excellent numbers of larval webs in nearly all the Argyllshire stations in August. Some new colonies also turned up and I was glad to find a strong extensive population on a headland near Benderloch.

Clossiana euphrosyne L. and *Clossiana selene* D. & S. unfortunately continued to suffer from the "bushing out" of their woodland habitats. Both are now rarities in Sussex apart from the colonies on the Surrey border. Reasonable numbers appeared in Wyre Forest however (especially *selene*) and *euphrosyne* had a good showing in some of the Lake District sites. *Melitaea cinxia* L. was reported in numbers from the Isle of Wight and appears to be spreading along the south coast from its strongholds around Compton Bay and St. Catherine's Point. An interesting report from the Channel Islands revealed that this butterfly was abundant on Alderney and the south coast of Guernsey in 1984. It was pleasing to hear that good numbers of *Mellicta athalia* Rott. were seen on the Cornwall/Devon border between June 21st and 23rd, and that the Exmoor colonies were also in very good shape — the emergence there commencing in early June. *Argynnis aglaia* L. appeared in small numbers in north Dorset, but there were increased sightings in the Channel Islands especially on Sark and Jethou, and a definite record from Guernsey.

The high brown fritillary, *Argynnis adippe*, D. & S. continued to cause concern, though slightly better numbers were reported from the Malvern area (with a first sighting around June 20th), and it appeared in good numbers in the scattered limestone woodland in the Witherslack hills. An average season was the consensus for *Argynnis paphia* L., though there appeared to be a slight gain in the west Sussex woods and evidence of spread into a wooded area near Highley, Shropshire. The dark *valezina* form was not uncommon in some areas of north Dorset but fewer than usual were seen in the Winchester woods. In some areas of the New Forest *paphia* did fairly well but the main emergence did not occur until mid-July. At this stage *Limenitis camilla* L. was also seen in some numbers in the New Forest. In fact the White Admiral seems to have had an excellent season from Shropshire to the south coast. It was reported to be spreading north to woodland in south Staffordshire and Worcestershire and was also found in Haugh Wood, Hereford. The 1899 Malvern Catalogue records *camilla* as 'very rare', but the butterfly is now fairly common around the Malvern Hills with a sprinkling in Wyre Forest.

For *Apatura iris* L. 1984 was an exceptional year. From my own observations in south Hampshire and Wiltshire it was the best since 1976. A casual search of sallows in one Hampshire wood at

the end of July revealed 9 ova in just under an hour. Reports from west Sussex and Surrey were slightly less encouraging however, though it was recorded as "quite common" in one or two localities. *Aglais urticae* L. also had a remarkable year throughout most of the country. In south Wiltshire and Dorset adults were common all through the year, with many nettle patches completely defoliated in August, and a large third brood was produced. Good numbers of *urticae* were seen in the northern Highlands between 19th March and 29th May, and again between 4th July to the 15th October. We saw many imagines in Argyll in late August (usually feeding on Scabious flowers) and a large late brood of full fed larvae was noted on the Isle of Seil during this time. *Polygonia C-album* on the other hand seemed to have rather a lean year but it was interesting to learn that it had returned as a breeding species to Guernsey after being last recorded in 1947. *Nymphalis io* L. appeared in good numbers in April, and the summer hatch in most areas was excellent, appearing as early as July 10th. There were also several records of the rare *Nymphalis polychloros* L. Some of these may have been the result of released specimens but there was definite evidence of persistent colonies in Somerset. The fine April weather brought out *Hamearis lucina* L. as early as April 25th in Hampshire, and in the Witherslack colonies (which normally emerge later), the Duke of Burgundy was first seen on May 7th. Most colonies of this local butterfly appeared to be holding their own in 1984, reports being received from downland sites in Sussex, west to Hawkesbury in Somerset and north to Witherslack.

The main reason for decline of *Plebejus argus* L. nowadays seems to be destruction of habitat, but in its remaining colonies this butterfly seemed to do quite well. It was late in emergence at Portland, but reasonable numbers were seen, and on Ashdown Forest it also had a good year. The isolated heathland locality at Chailey, Sussex also produced good numbers but it appears to have been scarcer than usual on the New Forest heaths. There is an isolated, fragile locality in Shropshire, and here, also, it was recorded in some plenty. In spite of the 'post 1970' dots on the distribution maps for the Channel Islands the last record was apparently from Jethou in the 1960's. T.N.D. Peet has searched for it over the last 5 years without success on Guernsey where it formerly occurred on the light soils in the north of the island.

Aricia agestis D. & S. showed something of an increase in 1984 in north Dorset but populations in west Sussex were in general very low. It was reported as very common on one site near Brighton however. Moderately good numbers were noted at St. Catherine's Down near Winchester. *Aricia artaxerxes* was detected commonly in several inland sites in Berwickshire. *Cupido minimus* Fuess. fared less well in this area of Hampshire in

1984. I failed to see a single specimen at St. Catherine's Down and numbers were hardly up to scratch on Portsdown. There was an early record on May 13th for Frome in Somerset, and it was recorded in fair numbers, locally, in the Cotswolds near Stroud and Painswick.

At Portland, *Lysandra coridon* Poda. was common (about the same numbers as 1983) and the usual vars turned up such as *fowleri* and *marginata*. *Obsoleta* forms were less common than usual however and there were no really striking aberrations. *Coridon* appeared sparsely in north Dorset and Wiltshire, but some of the localities near Cheddar in Somerset produced good numbers. Most other areas had an average year with an extended season to the end of September. Very small numbers in the first brood of *Lysandra bellargus* Rott. were reported from most localities where this local insect survives. None were seen at Martin Down, for example, on June 15th, and the spring brood in Sussex was described as very poor. Late summer broods were generally up to strength throughout however (including Martin) and one or two new colonies were discovered in Sussex.

In its double brooded range *Polyommatus icarus* Rott. shared a similar pattern to *bellargus*. There was a somewhat sparse first brood followed by a very good summer brood. In northern Scotland it was found commonly between mid-June and mid-July in Rosshire and northwest Sutherland, especially in coastal localities. The early spring hatch of *argiolus* was common in nearly all areas. As far north as Witherslack over 25 were seen by one recorder in a quarter-mile walk on April 27th (some holly trees were tapped in order to produce this excellent score for the north). There was a correspondingly large summer brood (in the south at least) and this delightful butterfly was recorded as abundant in Dorset, Somerset and Hampshire. Heavy parasitism of the resulting larvae were noted in west Sussex.

The small copper, *Lycaena phlaeas* L. produced at least 3 broods in most areas, the 3rd being particularly numerous in north Dorset, Wiltshire and Hampshire. A possible 4th brood was noted at Lewes in Sussex. I found *phlaeas* ubiquitous in coastal Argyll in mid to late August. *Callophrys rubi* L. on the other hand, was generally rather scarce in 1984. It was recorded from Torridon, Wester Ross on May 11th and 15th, and it was seen in hundreds in Northumberland along the Tyne valley on May 2nd. The females here were noted depositing ova in the buds of bilberry. This butterfly had a very early emergence due to the warm April, and J. E. Green suggests the possibility of a 2nd brood, since one or two were seen in mid to late August in his area of the west Midlands. After the super-abundance of *Thecla quercus* L. in 1983 the purple hairstreak appeared in much lower numbers in 1984. This was certainly the case in most of the strong Hampshire colonies and the same disappointing reports came from Wiltshire and Shropshire.

On the other hand several new Hampshire colonies were detected of *Strymonidia w-album* Knoch and it was reported as hanging on in small numbers in several Shropshire and Breconshire colonies and recorded in small numbers from near Bath, Somerset. In Worcestershire it was discovered breeding on common elm saplings and was recorded commonly at one site near Hereford. At its only known site in the west Midlands in Worcestershire, good numbers of *Thecla betulae* L. eggs were seen and in the blackthorn-lined lanes north of Oxford, T. Bernhard and I recorded around 100 ova during a few hours' search of the hedgerows. In Sussex a few new sites were found but numbers were reportedly low in many of the localities.

Anthocharis cardamines L. had an excellent year nearly everywhere; in the Black Isle, Rosshire, 20 were seen at Rosemarkie on May 14th where it was first recorded in 1973. It has also been noted in west Lancashire for the first time in the last two years. *Pieris brassicae* L. and *Pieris napi* L. on the other hand were rather scarce in southern England, and the latter unusually so in the Highlands. The brimstone had a remarkable year throughout its range. It was abundant here in April and over the six miles of country road between my home and Southampton, where I would normally expect to see perhaps half a dozen, I counted no less than 18 on April 9th. The fragile, weak-flying *Leptidea sinapis* L., though fairly common on the south Devon undercliff east of Sidmouth, appeared to be contracting its range in the west Midlands and produced low numbers on the Sussex/Surrey border. I did see one or two second brood specimens while inspecting the *aurinia* colony near Chiddingfold, but in general *sinapis* did not seem to do well in 1984. *Carterocephalus palaemon* Pall also was reported as slightly lower in Argyll but *Ochlodes venatus* Br. & Grey continue to increase its numbers in the Tyne valley and appeared to be spreading its range northwards. *Pyrgus malvae* L., though generally scarce in 1984 was seen near Droitwich, Shropshire on July 31st — possibly a second brood specimen. Along with the small fritillaries, *euphrosyne* and *selene*, the two skippers *Pyrgus malvae* and *Erynnis tages* L. appear to be suffering from the lack of suitable coppice woodland. This, unfortunately, must be one of the more difficult habitats to maintain artificially over a large enough area in the few woodland nature reserves that exist in southern England.

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THE PAST AND PRESENT STATUS OF THE
DAMSELFLY *COENAGRION PULCHELLUM*
(VAN DER LINDEN) (ODONATA: COENAGRIIDAE) —
IN CHESHIRE AND PARTS OF ITS ADJACENT
COUNTIES, CORRESPONDING TO THE
100KM SQUARE S J. (3 3).

By S. JUDD*

Introduction

The gradual disappearance in Britain this century of the damselfly *Coenagrion pulchellum* has been noted by Lucas (1900), Longfield (1949) and Hammond (1977), in their classic books on the British Odonata. In 1980, The Nature Conservancy Council publication 'The Conservation of Dragonflies' categorised the species as being 'locally common' in Britain, expressing the fear that the insect is 'fast declining and requires particular attention if it is not to reach endangered status'.

The most recent Biological Record Centre (B.R.C.) map, published in the second edition of Hammond (1983), shows the British distribution of the species to be mainly southern and eastern, with the notable exceptions of populations in Gloucestershire and Somerset, South Wales and Anglesey. In this context a series of thirteen specimens of *Coenagrion pulchellum* in the Merseyside County Museum collection, from Meols, Wirral, Cheshire (now Merseyside), was of interest. The specimens, nine male and four female, were all collected between 1939 and 1951 by W. K. Ford, a past Keeper of the museum's invertebrate zoology collections. Ford's comment in a letter to a local naturalist in 1971, that the damselfly had been 'common at times' on the Wirral, led to speculation that the species might still occur locally. The area chosen for investigation corresponds to the 100km. square S J. (3 3) and is centred on Cheshire and parts of its adjacent counties which fall within this boundary.

Pre 1984 records

B.R.C. records published in Hammond (1983):—

Whixall Moss, Shropshire (SJ. 4--, 3--), H. L. Burrows, 9.8.1931
(Manchester Museum specimen).

Between Leeswood and Mold, Clwyd (SJ. 2--, 6--), C. M. Swaine,
6.8.1944 (*Ent. Mon. Mag.* 82 : 42).

Marton Pool, Shropshire (SJ.293,025), D. A. L. Davies, 7.7.1947.

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Top Pool, Berrington, Shropshire (SJ.520,072), M. D'Oyly, — — 1980.

Berrington Pool, Shropshire (SJ.525,073), R. G. Kemp, 15.6.1980, (R. G. Kemp collection). (These last two records are both covered by the same 'dot' on the map).

Additional pre 1984 records:—

Rainhill, Lancashire (Merseyside) (SJ.4/5--, 9--), H. H. Higgins? pre 1900, (ex Merseyside County Museums specimen).

Frodsham, Cheshire (SJ.5--, 7--), 9.6.1892, L. Greening? (Warrington Museum specimen).

Hatchmere, Cheshire (SJ. 55-, 72-), 7.6.1900, L. Greening? (Warrington Museum specimens).

Delamere Forest, Cheshire (SJ.5--, 7--), W. M. Tattersall, 27.5.1915, (Lucas W. J. *Lancashire and Cheshire Naturalist*, 12: 55-60).

Newchurch Common, Cheshire (SJ.6--, 6--), C. R. Brown, 31.5.1915, (Lucas W. J. *Lancashire and Cheshire Naturalist*, 12: 55-60).

Delamere Forest, Cheshire (SJ.5--, 7--), A. R. Jackson, -6.1920, (Lucas, W. J. *Lancashire and Cheshire Fauna Committee Report*, 8:10-11).

Sinderland, Cheshire (Greater Manchester) (SJ.7--, 9--), H. Britten, 15.6.1922, (Manchester Museum specimens).

Meols, Cheshire (Merseyside) (SJ.23-, 89-), W. K. Ford, 9.6.1939, 11.6.1939, 30.6.19--, 6.7.1947, 1.7.1950, (Merseyside County Museums specimens).

Between Manley and Hatchmere, Cheshire (SJ.5--, 7--), J. P. Savidge, 1950-1953, (Ford, W. K. *North Western Naturalist*, 2(XXV): 602-603).

Upton, Cheshire (Merseyside) (SJ.27-, 88-), W. T. C. Rankin, 17.5.1952, (*Birkenhead School Natural History Society Journal*, 1952:15.).

Landican, Cheshire (Merseyside) (SJ.28-, 85-), N. I. Dalziel, 20.6.1953, (*ibid.* 1953:13).

Landican, Cheshire (Merseyside) (SJ.28-, 85-), W. T. C. Rankin, 27.5.1961, (*ibid.* 1953:14).

The B.R.C. map published in Hammond (1983), contains only three pre-1960 records and one post-1960 record. Another fourteen

site records have been added to this (above). Ideally a voucher specimen is necessary to substantiate records for *Coenagrion pulchellum* as confusion can arise between this species and the widely distributed *Coenagrion puella* (L.), 'both species have variations which may overlap' Hammond (1983). The Merseyside, Manchester and Warrington museum specimens were all correctly identified. I am satisfied that the Birkenhead School records are correct; W. K. Ford accepted them in his *Odonata of Lancashire and Cheshire* (1953 and 1954), and there is a correctly identified, non data specimen in the School's collection. The Rainhill specimen was verified by Ford (1953), but is no longer in the Merseyside County Museum collection. Voucher specimens for the Betton Pool and Berrington Pool sites are housed in the collection of R. G. Kemp. The remaining records are not known to be substantiated by existing voucher specimens, although many were accepted and published by W. J. Lucas in his *Odonata of the Lancashire and Cheshire District* (1919) and in a subsequent addition to this list (1922).

1984 Status

A search for *Coenagrion pulchellum* in 1984 was guided by the past distribution records for the species, centred on the Wirral peninsula, Delamere Forest, and some of the larger Cheshire and Shropshire meres. Other site information was kindly provided by R. G. Kemp and B. J. Walker. The damselfly was re-discovered at Hatchmere, Cheshire, on the edge of Delamere Forest (SJ.533,722). A chance meeting at Hatchmere with a local naturalist, Mr. B. J. Walker, revealed that the damselfly had been common there since 1977, when he first visited the site. Two new sites were discovered for the species at Hanmer Mere, Clwyd (SJ.454, 397) and a pool in Little Budworth Country Park (SJ.587,658). The insect was abundant at Hatchmere and Hanmer Mere, but Mr. Walker has only recorded a few males from Little Budworth. 1984 voucher specimens for the Hatchmere and Hanmer Mere sites are held in the Merseyside County Museums collection. Mr. R. G. Kemp has also kindly informed me that the damselfly was common at Berrington Pool (SJ.525,073) and Top Pool Berrington (SJ.520,072) in 1984. It is presumed that the species can still be found at Betton Pool (SJ.520,072).

The damselfly's habitat at Landican and Upton on the Wirral has been destroyed by modern housing developments. There is no evidence of the damselfly at Meols; the only large water body is now heavily pressurised by fishermen, most of the local marl pit ponds have been filled in and many of the streams and ditches between Meols and the Mersey estuary are canalised and polluted. The Sinderland, Rainhill and Marton Pool sites were not visited. Most of the larger Shropshire and Cheshire meres were visited, but in the time available no further records were found.

Discussion

Coenagrion pulchellum was historically far more widely distributed in Cheshire and its adjacent counties than it appears to be today. The damselfly's disappearance from many of these localities would seem to be due, in part, to the combined environmental pressures of urbanisation and agricultural intensification. Except for the pool at Little Budworth Country Park, the sites where the damselfly was found in 1984, are all large relatively undisturbed water bodies, rich in nutrients and fringed with emergent vegetation. They do not seem to fit Hammond's (1983) description of the typical habitat for the species as being, 'characterised by watermeadows and dykes'. It is possible that these larger undisturbed water bodies might be the last refuges for the species in the study area.

These findings do in part enforce the Nature Conservancy Council's view that the species is 'fast declining and requires particular attention'. However, I am sure that because of similarities with the common *Coenagrion puella*, *Coenagrion pulchellum* is, and always has been, under recorded in the study area. The addition of the new sites in 1980 and three more in 1984 provides some encouragement. I am optimistic that further new sites for *Coenagrion pulchellum* might be discovered if a systematic search of the area is made, especially of the larger water bodies around Mold, Wrexham and the Cheshire flashes.

Acknowledgements

I should like to thank Mr. C. Johnson The Manchester Museum, Mr. A. Leigh Warrington Museum, and Mr. J. M. Griffith Birkenhead School, for giving me access to the collections in their care. Also Mr. B. J. Walker, Mr. R. G. Kemp and Mr. R. Merritt for providing distributional information; Dr. I. D. Wallace for his help and advice.

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PYRGUS MALVAE L. IN MID-JULY. — While collecting on the chalky part of Foulnden Common, W. Norfolk, on 14th July last, I swept a specimen of the grizzled skipper, a butterfly I had supposed long over by that date. Had it been worn, there might have been little cause for surprise; but in fact it appeared in faultless condition, neither rubbed nor chipped. No others of the species seemed to be about. Whether, therefore, it was an individual whose development had for some obscure reason been retarded, or one of an exceptional second brood such as are occasionally noted, is a question I leave to readers better qualified to judge. — A. A. ALLEN.

A LATE SPILOSOMA LUTEUM HUFN. (BUFF ERMINE). — On 18th August, 1985, I came upon a quite undamaged and fresh-looking male of this familiar insect sitting on the pavement by a busy road not far from my house, slightly overhung by bushes in an adjoining park. One of these, almost above the spot, was a white-flowered buddleia — to which possibly the moth had been attracted whilst in flight the previous night; and from which it may have fallen shortly before I arrived on the scene, luckily escaping the feet of passers-by. It seems that normally the species is over by mid-July or thereabouts, and that August specimens are exceptional. — A. A. ALLEN.

MYTHIMNA LOREYI (DUP.) (THE COSMOPOLITAN) IN WEST WALES — I was pleased to capture a fine specimen of *loreyi* at Tregaron, Dyfed on the night of 10th October 1985. I believe this is the first record of this immigrant species in Dyfed. My thanks are due to Mr. A. Riley of Rothamsted for confirming my identification. I. J. L. TILLOTSON Chief Warden, NCC Dyfed Powys Region.

OECOPHORA BRACTELLA (LINNAEUS) (LEP: OECOPHORIDAE) IN DEVON. — On 2nd. May 1985 I bred one specimen of this species from a larva I found under the bark of a stump of *Betula* on 17th. March at Spitchwick Common, Devon. This is a wooded area on the southern edge of Dartmoor about 4 miles to the west of Ashburton. It appears that this is the first record for the county and only the fifth vice-county record in the British Isles. R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.

BUTTERFLIES IN MOROCCO

By D. HALL*

Part I – August 1982

Several friends had recently visited Morocco and had told me what an interesting country it was, so in the summer of 1982 I decided to pay a visit there myself. Accordingly I arrived in Marrakesh on July 30th and spent the first few days exploring this fascinating city and its environs. The weather was very hot and few butterflies were on the wing. The lawns of my hotel produced the little blue *Zizeeria knysna* Trimen in good condition and the gardens *Parage aegeria* L. and *Artogeia rapae* L. neither of which were common or very fresh.

Marrakesh is set on the edge of the plain of Haouz at the foot of the High Atlas Mountains and the city is surrounded by large groves of olives and date palms. Nearly all the vegetation beneath the trees and at the roadsides was completely dried up at this time of year but the few remaining flowers attracted many large *Lycaena phlaeas* L. form *elea* Fabricius with its dusky wings and long tails. On an abundant spiny shrub *Zizyphus vulgaris* there were many of the attractive little *Tarucus theophrastus* Fabricius with its beautifully marked undersides. The olive grove in the Menara garden near my hotel was well irrigated and the paths between the trees were overgrown with fennel and here *Papilio machaon* L. was fairly common.

It was obvious that to see more butterflies I must head for the mountains, so on August 3rd I got the bus to Ourigane at about 4000 feet in the High Atlas. As we climbed out of the plain into the mountains, the vegetation became fresher and the olive groves were replaced by orchards of apples, peaches and walnuts, the bright greens contrasting strongly with the pinks and reds of the soil. The bus stopped at Asni so we could refresh ourselves and while buying a drink, I noticed a large dark butterfly fluttering in the window of the bar. I managed to box it without attracting too much attention and was pleased to find it was a very fresh specimen of *Pseudoter-gumia fidia* L.

At Ourigane I investigated some rocky slopes leading down to the N'Fiss river which were covered with spiny *Capparis* bushes and around them were flying many Desert Orange Tips – *Colotis evagore* Lucas. This was a butterfly I was particularly pleased to see but they were not easy to catch without entangling ones net and legs in the thorns. My antics soon attracted an audience of Berber children who all wanted to help and shouted 'Voici Monsieur' whenever another butterfly came in range.

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Walking back through the village the hedgerows were an interesting mixture of oleander, prickly pear and blackberries, with pomegranates and peach trees overhanging the lane. Here *Iphiclides podalirius feishamelii* Duponchel was quite common sailing in and out of the trees but all the ones I saw were very worn. The ditches at the roadside were overgrown with mint and the flowers were alive with butterflies, *Pararge aegeria* L. *Colias crocea* Fourc, *Artogeia rapae* L. *Pontia daplidice* L. and *Lycaena phlaeas* L. were all common. I caught one *Syntarucus pirithous* L. and several small *Polyommatus icarus* Rottemburg. Here also *Lysandra punctifera* Oberthur was common also in a small late season form together with a few *Aricia agestis cramera* Eschscholtz.

The next day I went by bus over the High Atlas to Ouarzazate at 3000 feet. On the way there were tempting glimpses of large black butterflies from the bus windows as we ground our way over the Tichka Pass with boiling radiator. We stopped at the little mining village of Aguelmous in the mountains and here I got a closer look at *Berberia abdelkader* Pierret but didn't manage to catch any. *Pontia daplidice* L. and *Aricia agestis cramera* Eschscholtz were both fairly common at the roadside.

When we arrived in Ouarzazate the temperature was 115°F which made collecting rather heavy work but the lucerne fields near the river produced large numbers of *Colias crocea* Fourc and very fresh *Lampides boeticus* L. It was novel to be papering ones specimens under the shade of palm trees with the sound of the wailing muezzin calling the faithful to prayer across the fields.

On August 6th I went by bus up the Ourika valley near Arbalou in the High Atlas at about 4000 feet. Here in light woodland and wet meadows beside the river the wild mint flowers proved as attractive to butterflies as they had at Ourigane and similar species were present. *Artogeia rapae* L. and *Pontia daplidice* L. were both present in small forms only 18 mm across the wings. In addition I caught *Carcharodus alceae* Esper and *Nordmannia esculi mauretanica* Staudinger, a hairstreak which has not perhaps been recorded in the High Atlas before.

On August 9th I hired a car to visit Oukaïmeden at 6000 feet in the High Atlas. The lower mountain slopes were cool and showery but higher the weather was dry but windy and overcast. This didn't seem very promising but the rocky slopes below the gorge leading to the village were a rich collecting ground and butterflies abounded on the flowers, especially on the large bluish-grey thistles. Here *Lysandra punctifera* Oberthur was common in a large brilliant form together with *Issoria lathonia* L., *Melitaea didyma occidentalis* Staudinger, *Maniola jurtina hispulla* Esper and many large fresh *Chazara briseis* L. I was also very pleased to see many *Berberia abdulkader* Pierret most of which were, however, rather worn

but I did manage to net some fairly good specimens. Another large dark butterfly proved to be *Satyrus ferula* Fabricus. Here also I caught one *Neohipparchia stalilinus* Hufnagel and one *Coenonympha pamphilus* L. From here I drove up to the village of Oukaimeden, set in a valley reminiscent of a landscape in one of the bleaker parts of the Lake District. Here the grassy meadows and hillsides were alive with *Melanargia galathea lucasi* Rambur and *Aricia artaxerxes montensis* Verity. The roadside thistles also produced many *Gonepteryx cleopatra* L., *Pseudocharzara atlantis* Austaut and *Hyphonephele maroccana* Blachier, the last two local and interesting Moroccan species. I also caught the magnificent *Pandoriana pandora* Denis and Schiff and the attractive *Hesperia comma benuncas* Oberthur in which the white spots on the hindwings are joined to form a wide band.

This was an excellent locality but thundery showers put an end to further collecting, so I returned to Marrakesh.

On August 10th I had another trip to Ourigane to see again the charming little *Colotis evagore* Lucas and also caught *Coenonympha dorus fettigii* Oberthur feeding on the blackberry flowers.

Early in the morning of August 13th I sadly made my way to the airport for the plane to Casablanca and London, very pleased with my first visit to Morocco.

Part II – April 1983

I had found my trip to Marrakesh in August 1982 so interesting that I was very keen to pay Morocco another visit. At the end of the Spring Term 1983, therefore, I was packed and 'ready for off' again.

I flew out on March 28th to Gibraltar and the morning of the next day I spent touring the Rock, visiting the caves of St. Michael and photographing the apes. After lunch I walked up the steep streets past the Moorish Castle to an area of light woodland and flowery lanes near St. Catherine's Battery. Here were pine trees, bright yellow gorse, broom and bushes draped with wild clematis, honeysuckle and Aristolochia. I was very pleased to see sailing along the roadside many *Zerynthia rumina rumina* L. with occasionally a few *Gonepteryx rhamni* L. and *Gonepteryx cleopatra europaea* Verity which required a more determined chase.

In the clearings of the woods were several of the lovely little *Anthocharis belia euphenoides* Staudinger, very freshly emerged, the females with lovely creamy markings. Here also there were a few *Pararge aegeria aegeria* L. and later, by the roadside, a small white butterfly proved to be *Euchloe tagis tagis* Hubner.

A plane late in the evening took me across to Tangier so that now my second visit to Morocco had really started. After breakfast the next day I walked out a mile or so along the Avenue D'Espagne to the east of the town. There was a welcome profusion of colourful

wild flowers along the sandy roadside and in the vacant lots and gardens. Although it was windy there were several species of butterflies on the wing. *Artogeia rapae* L. and *Pontia daplidice* L. were common together with a few worn *Papilio machaon* L. and several *Iphiclides podalirius feisthamelii* Duponchel fluttering around the fruit trees. *Euchloe belemia belemia* Esper was very common apparently first and second broods flying together. *Lycaena phlaeas phlaeas* L. darted along the flowery roadsides and on the way back to town on some waste ground, I was very pleased to find several *Tomares ballus* Fabricius settling on the rough herbage. It is a very beautiful little insect especially the velvety sage green of its underside.

That afternoon I spent exploring the medina with all its lively bustle. I was surprised to see a Berber woman with a large basket of live hedgehogs for sale. I walked up through the narrow streets to the Kasbah for some mint tea and to enjoy the wide views across the straits to Spain. Also from here I could see a range of wooded hills to the west of the town which looked interesting and worth investigating.

The following morning I was up early and making my way across the town and out along already hot and dusty streets to the west. I was soon out in the country with masses of flowers at the roadside, buttercups, vipers bugloss, wild gladiolus, cistus, lavender, brilliant scarlet vetch and carpets of tiny iris which were in bud. The road was busy with camels and donkeys carrying huge bundles of firewood to the town and also old men and women trudging along with great piles of heather and brushwood on their backs.

Here by the roadsides and on the gorse and lavender covered banks were many of the bright yellow males of *Anthocharis belia belia* L. and the pale females, differently marked to those I had seen in Gibraltar a few days before. Here also were many more *Tomares ballus* which were rather wary of being stalked with the camera. As I was focusing on one, I noticed how pale was the underside of its forewings. I put the camera down and netted the butterfly. It was a beautiful aberration in which the orange of the upperside was replaced by a very pale silvery yellow. As I walked through the low scrub, small dark butterflies fluttered up here and there and then sank lazily back to earth a few feet away. This proved to be *Tomares mauretanicus* Lucas which was local but common and easy to net as its flight was so sluggish. On these heathy slopes *Polyommatus icarus* Rott. was also common together with *Lysandra punctifera* Oberthur including many of the large and beautifully marked females and *Aricia agestis cramera* Eshscholtz.

In the damper areas near streams, I found *Lasiommata megera* L. and *Coenonympha arcanoides* Pierret fluttering about and sitting on the leaves. The gardens of some cottages by the roadside produced sightings of several more *P. machaon* and *I. podalirius feisthamelii* but they were not easy to catch.

After a lunch of a couple of oranges under the shade of the umbrella pines near the hilltop, I started back as the sun was now very hot. On the way I was interested to see several shrikes or butcher birds perched high on the thorn bushes and to find many of the large moths which they had impaled on the thorns. In the heather and low scrub I frequently came across huge red and black devil's coach horse beetles whose warning colouration certainly deterred me from interfering with them.

I. podalirius feisthamelii was still to be seen around the gardens I had passed earlier in the day. One large female which had settled low on an almond tree was too tempting to leave. I furtively clambered through the hedge and made my way through the garden. I had just successfully netted the butterfly and almost made my escape, when a vociferous gentleman whom I took to be the owner of the garden, emerged from his cottage higher up the hill. Fortunately he only waved and shouted what I took to be cheery arabic greetings. The roadsides suddenly seemed to have little of entomological interest to detain me further so I returned hastily towards the town. The butterfly later obliged by laying several eggs which I have enjoyed rearing up after my return to England. I collected in this area, known as la Montagne, several times during the next two weeks and added *Zerynthia rumina africana*, and *Pieris brassicae* to the list of species I had seen as well as the beautiful *Glaucopsyche melanops algerica* Heyne which was local on the higher slopes and rocky hillsides.

This was a delightful area in which to collect, hot pine scented breezes, hillsides covered with white cistus and purple lavender and an ever changing parade of donkeys, camels and carriers on the road far below. In a stream side pool I found a pond tortoise *Emys orbicularis* and in several areas in the scrub, I found colonies of the fantastic purple orchid *Serapias cordigera* which I had never seen before.

On my way back the tiny irises — *Iris sisyrinchium* Linn. I had noticed in bud earlier in the day were now fully out and I realized they only opened in the afternoon. The meadows and roadsides were blue with great sheets of flowers.

I was soon back in the town and a cafe in the medina provided some very welcome tea delicately scented with orange flowers and a chance to rest after a very enjoyable days collecting.

On the 1st of April I got a bus which took me south to Fez from where I hoped to go up into the Middle Atlas to visit Ifrane and Azrou, but the weather was disappointingly cold and wet and there seemed little point in going further into the mountains so I took the chance to do some sightseeing and to visit Meknes, Moulay Idriss and the marvellous roman ruins at Volubilis.

On my way back north I made a detour to the Rif Mountains

to stay at Chaouen for a couple of days. This was a very beautiful little town of whitewashed houses perched high in the mountains with spectacular views across a patchwork of fields and wide valleys with groves of poplar trees and braided silver rivers far below.

Here the weather was hot and sunny and a rough track leading up beside some waterfalls into the mountains behind the town, proved to be a rich collecting area.

The brightly marked *Eurodryas aurinia beckeri* Herrich — Schaffer was common along the honeysuckle draped hedges and the dark red *Nymphalis polychloros erythromelas* Austaut was frequent sailing across the rough ground but was not easy to net on such rocky slopes. *Callophrys rubi* L. was very common on the blackberry bushes and I also saw *Anthocharis belia*, *Gonepteryx cleopatra*, *Tomares mauretanicus*, *Lycaena phlaeas*, *Coenonympha pamphilus*, and *Lasiommata megera*.

Some steep abandoned fields covered in *Anchusa* were an excellent locality for *I. podalirius feisthamelii* and had I known I need not have bothered to trespass earlier, as here it was easy to take two or three in the net at once, as they hovered in front of the blue flowers.

The track up into the mountains was a busy thoroughfare with cattle and goats being taken up and down and donkeys carrying vast piles of hay and brushwood. The berbers who passed me were very interested in my collecting activities and to see what I had caught. It was charming to receive splendid smiles from behind the lowered veils of the young country women or a wave from their henna painted hands.

In the cool of the evening I enjoyed relaxing with a large glass of fresh orange juice or some coffee and sorting through the days catch at a table under the mulberry trees in the square and watching the huge pink and grey mountains fade in the shimmery dusk. Here indeed was a place to visit again.

The bus I took back to Tangier stopped for a couple of hours at the village of Khemis as it was market day. This was one of the most colourful markets I had ever seen at which all the people from the mountain villages congregated each week. The Berber women wore wide brimmed straw hats decorated with ropes and pompons of indigo wool and layers of very brightly coloured dresses and petticoats with huge belts around their waists and heaps of gaudy jewellery in silver and amber about their necks and wrists. The men were dressed in rough brown djellabas with hoods or crocheted caps on their heads. The square was a riot of colour and noise, huge piles of brilliant oranges, baskets of yellow and brick-red spices, beautiful fresh vegetables and fruit, gaudy sweetmeats and fly covered heaps of offal on the butchers stalls. It was easy to wander for hours amongst so much colour and bustle but the blar-

ing horn of the bus reminded me it was time to go and in another couple of hours I was back in Tangier and comfortably settled at the Rif Hotel.

During the last few days of my visit I was content to relax and explore the intricacies of Tangier.

However, I had several walks out to the east of the town to an area of low hills covered with dwarf oaks and palms, lavender and white flowered cistus. The only species I saw here I had not noticed before were the tiny silvery blue *Pseudophilotes abencerragus* Pierret and the skipper *Spialia sertorius ali* Oberthur.

There were many *V. cardui* here and by following a female I was able to collect a few ova, however, they were very small and difficult to see, their jade green colour exactly matching the underside of the thistle leaves. These ova I reared up on my return home and was able to take some photographs of the very attractive larvae and pupa. In this same area I noticed a small striped mammal scurrying about in the scrub, it was *Mus barbarus* the Barbary Striped Mouse.

My two trips to Morocco had provided plenty of colour and interest and the opportunity to see about fifty different species of butterflies of which thirty five or so were kinds I had not seen before. Also I had seen a fascinating sample of the Natural History of a beautiful and friendly country.

List of butterflies from Morocco

(M) – Marrakesh (August 1982)

(A) – Ourika and Ourigane High Atlas (August 1982)

(O) – Oukaïmeden High Atlas (August 1982)

(G) – Gibraltar (April 1983)

(T) – Tangier (April 1983)

(C) – Chaouen Rif Mountains (April 1983)

Papilio machaon L. (M) a few worn ones. *Ipichlides podalirius feisthamelii* Dup. Common near gardens and orchards. (A) worn, (C & T) fresh. *Zerynthia rumina rumina* L. (G) common. *Zerynthia rumina africana* Stichel (T) becoming worn. *Artogeia rapae* L. (M.A.) a few worn ones. *Pontia daplidice* L. (A) a few worn ones. *Euchloe belemia belemia* Esp. (T) very common both first and second broods flying together. *Euchloe tagis tagis* Hub. (G) one fresh. *Anthocharis belia belia* L. (T. & C) common and fresh. *Anthocharis belia euphenoides* Staud (G) common and fresh. *Colotis evagore nouna* Lucas (A) locally common and fresh. *Colias crocea* Geoff (M.A.O.T.C.) common. *Gonepteryx rhamni* L. (G) a few. *Gonepteryx cleopatra cleopatra* L. (O) common. (T) common. *Gonepteryx cleopatra europaea* Verity (G) several. *Nordmannia esculi mauretanica* Staud (A) a few worn ones. *Callophrys rubi* L. (T & C) very common. *Tomares ballus* Fab (T) common. *Tomares*

mauretanicus Lucas (T & C) locally common. *Lycaena phlaeus* L. ubiquitous. *Lampides boeticus* L. (M. A & O) common near villages. *Syntarucus pirthous* L. (A) only one seen. *Tarucus theophrastus* Fab. (M. A & O) very common. *Zizeeria knysna* Trimen (M & O) common near farmland and gardens. *Glaucopsyche melanops algerica* Heyne (T) locally common. *Pseudophilotes abencerragus* Pierret (T) very local and uncommon. *Aricia agestis cramera* Eschsholtz (O. A & T) fairly common. *Aricia artaxerxes montensis* Verity (O) very common. *Lysandra punctifera* Oberthur (O. A & T) frequent. *Polyommatus icarus* Rott (O & A) common in a very small form, (T) locally common. *Nymphalis polychloros erythromelas* Austaut (C) common. *Cynthia cardui* L. (A & O) A few, (T) common. *Padoriana pandora* Denis & Schiffermuller (O) common. *Issoria lathonia* L. (O & A) a few, (C) one. *Melitaea didyma occidentalis* Staudinger (O) several. *Eurodryas aurinia beckeri* Herrick-Schaffer (C) common and fresh. *Melanargia galathea lucasi* Rambur (O) very common and fresh. *Neohipparchia stalilinus sylvicola* Austaut (O) only one. *Pseudotergumia fidia* L. (Asni) only one. *Chazara briseis* L. (O) very common. *Pseudochazara atlantis* Austaut (O) common but worn. *Satyrus ferula atlanteus* Verity (O) abundant and fresh. *Berberia abdelkader* Pierret (O) common but worn. *Maniola jurtina hispulla* Esper (O) several. *Hyponphele maroccana* Blachier (O) common but getting worn. *Coenonympha pamphilus* L. (O) a few, (T & C) fairly common. *Coenonympha dorus fettigii* Oberthur (A) only one. *Coenonympha arcanoides* Pierret (T) locally common. *Parage aegeria aegeria* L. (M. A. T & C) common in woodland. *Lasiommata megera* L. (T) locally common. *Spialia sertorius ali* Oberthur (T) local and uncommon. *Carcharodus alceae* Esp. (A) only one. *Hesperia comma benuncas* Oberthur (O) common.

THE MARSH FRITILLARY (*EURODRYAS AURINIA* ROTT.) IN DUNBARTONSHIRE — On June 15th 1985 I was searching a swampy field in the Ben Bowie area near Helensburgh. The area is grazed by sheep and occasionally stray cattle. Devil's bit scabious is present in the wetter areas, but is not abundant. Although I was searching for *Boloria selene* D. & S., which is common here, I was surprised to find a female marsh fritillary. Further searching turned up a male, in average condition. This is particularly interesting in view of the comments by Thompson (*Butterflies of Scotland*) who states: "The species has its headquarters in Argyllshire, possibly extending into Dunbartonshire. . .". The distribution map shows only a pre-1900 record for this species.

There are no artificial fertilizers or pesticides used in this area, but unfortunately large scale drainage is underway to prepare for conifer planting. R. CAIN, 32 Nelson Place, Helensburgh, Dunbartonshire.

A MODERN REVIEW OF THE DEMISE OF
HECATERA DYSODEA D. & S.:
THE SMALL RANUNCULUS

By COLIN PRATT*

"Establishing the facts about extinct species has considerable detective interest, but at the end it is usually probability and not certainty which results" (Bretherton, 1951). This paper is no exception to the general rule.

A number of reasons for the local and national extinction of the small ranunculus moth have been proposed — climatic change, parasites, decline in lettuce seed production, change of lettuce variety, the introduction of glasshouse lettuce growing, the increase in small birds, and the most popular but vague "agricultural changes" — all without supportive evidence. *Hecatera dysodea* was a locally common moth during parts of the 19th century, although it may well have been much less frequent before the dramatic increase in the growing of eating lettuce, and that grown for seed, over those years. During the last quarter of the 19th century the insect disappeared from most of the localities where it had not been common, away from the east; the most striking decline occurred over the decade following the mid 1880s, when inroads were made in more eastern areas.

At the close of the century it was said of the species that "thirty years ago it was one of the most reliable . . . of visitors . . . but no such attractive visitant now haunts our London gardens" (Barrett, 1897), and it was completely absent in the south and west. After a rally in 1900, the insect rapidly lost ground in its eastern heartland and within a decade had disappeared from all but one of its traditional homelands. From 1912 onwards the insect became very rare in the whole country. After the First World War there were no sightings until the 1930s when it was seen in Hertfordshire, Somerset and Sussex. These were the last unquestionable British records.

As a rule the imago flew during the latter part of June and early July and usually came to entomological notice feeding from flowers at early dusk. Larvae fed on the flowers and unripe seed-pods of cultivated lettuce (*Lactuca sativa* L.), wild lettuces (*Lactuca serriola* L., *L. virosa* L., and *L. saligna* L.), various sow-thistles (*Sonchus* spp.), and reportedly on smooth hawks-beard (*Crepis capillaris* L.); its name of *dysodea* probably originated from the larvae, as it means "ill-smelling". The larva pupates just underground at the end of August.

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The Records

A distribution map has been published (Heath & Emmet, 1979) showing that the species was found mainly in eastern England but completely absent north of the Wash; the insect was also almost absent from central southern England and usually rare south of London and west of Hertfordshire.

During parts of the 19th century the species was reported as locally common in Suffolk, Essex, Norfolk, Surrey, north-west Kent, Cambridgeshire, Huntingdon, and the Greater London area; it was uncommon, but present, in Sussex, Dorset, Berkshire, Oxfordshire, Somerset, Herefordshire, Hampshire, Gloucestershire, Worcestershire, Glamorgan, Hertfordshire, Northamptonshire, and Bedfordshire.

In Kent, and many of the leading counties for fresh vegetable and seed growing, the distribution of *dysodea* followed that of the market-gardens; by far the most records came from these areas and larvae were sometimes "really mischievous" (*loc. cit.*). The insect's headquarters in Kent were at Dartford, in Cambridgeshire at Wicken and Cambridge, and in Hertfordshire in five places all around Hoddesdon.

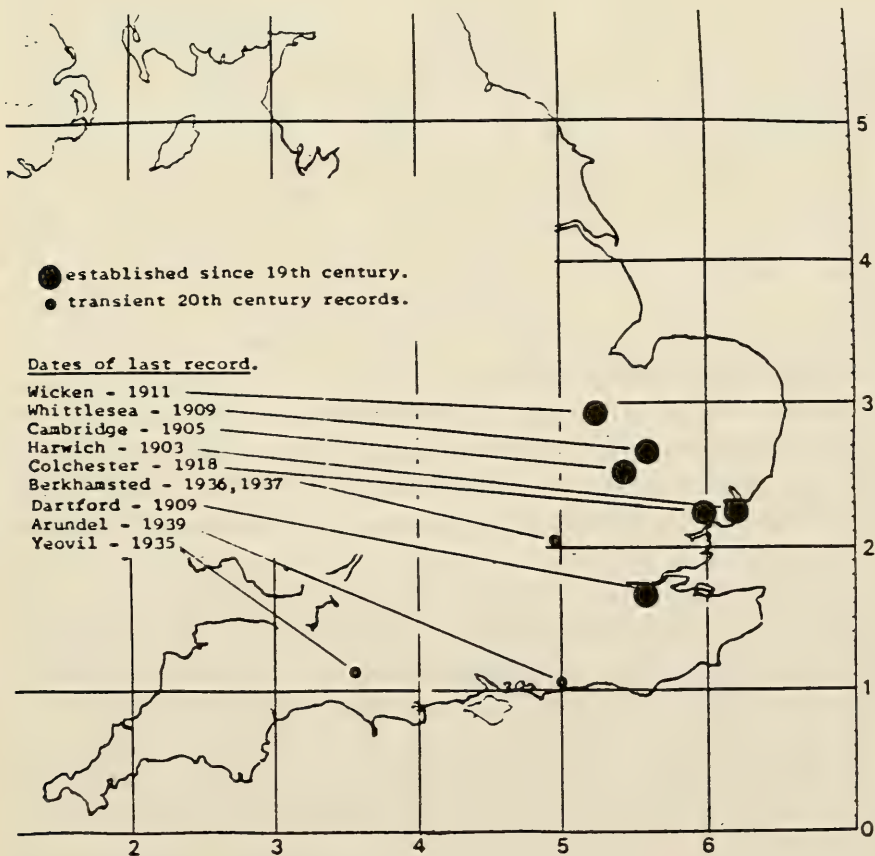


Figure 1. Status and distribution of *Hecatera dysodea* 1901 to date.

The heyday for the small ranunculus was between 1896 and 1900 inclusive, when it was found in at least seven counties — Kent, Suffolk, Surrey, Cambridgeshire, Essex, Gloucestershire, and the West Country (Somerset?).

The recorded occurrence of the insect was cyclic; in Kent the records are virtually annual between 1845-48, 1857-60, 1871-76, with later sightings in 1896 and 1909 (Barnes-Hune, 1960-61). Similarly in Cambridgeshire although there are isolated records for 1825, 1845, and 1885, *dysodea* was noted almost continuously from 1896 to 1911 inclusive; it was also seemingly briefly established at Berkhamsted in Hertfordshire during the 1930s. There are relatively few dated reports from other counties. Nationally the moth was inclusively recorded from 1843-48, 1857-60, 1871-76, 1896-1911, and 1935-37, almost sequentially; it was also found in 1825, 1888, at Colchester in 1918, and in 1939 at Arundel, Sussex. The last British mention is contained within an anonymous field note published in 1951; the insect was reported as having "almost disappeared. In fact until a few years ago it was held to have deserted our island. However, it still exists in at least one county" (Anon 1951). A summary of the known records was then published (Bretherton, 1951) and only a few additions and corrections have been made since — but no more *dysodea* have turned up. Surely there are unpublished details on specimens in private collections that would add to our knowledge and the records listed here?

An extreme view would be to suggest that the species was never permanently established here, as serial sightings from individual spots are few, but this seems unlikely — at least until after the First World War.

Foreign Imports

The insect was widespread and locally common in France and Belgium over the first third of this century (Culot, 1909-13; L'Homme, 1923-35), as elsewhere on the continent, and this status has been retained to the present day, although a decline has been reported in north-central Europe after 1960 (Heath & Emmet, 1979). There is no evidence of a European decline synchronous with our own.

About 20% of lettuce consumed in Britain over the early years of this century (about 10,000 tons per annum) was imported from Holland and France, together with small quantities from Belgium. The French supplies usually arrived from December to May from Perpignon and just south of Paris; Dutch imports arrived from late April through to November (Ministry of Agriculture & Fisheries, 1932). In England, mainly in black soil areas, Cos lettuces were pulled rather than cut (Min. of Ag. & Fish, 1955) and if this practise was also performed in the European exporting countries it is just conceivable that the occasional *dysodea* pupa could have been im-

ported with root-attached earth. Could imported pupa have contributed to, or even be the source of, the records in this country after the First World War ended — or even before? The insect was late established at Berkhamsted during the 1930s but had previously been reported close by — but not for about half a century; singletons were also noted at Arundel and Yeovil during this decade. Immigration seems unlikely, as not a single specimen has been seen in this country, despite the advent of coastal mercury-vapour moth traps, since the beginning of the Second World War. Therefore, on the available evidence, it is more likely that the moth maintained itself here at a very low density.

“The majority of recorded distributional changes and persistent changes in the abundance have resulted from vegetational changes — most of them from vegetational changes that either were caused by man or arose from the ecological successions of vegetation that human activities permitted to commence” (Beirne, 1955). There were only three ways in which *dysodea* could have existed in this country — on wild plants, on lettuce grown for seed, or on cultivated eating lettuce which had bolted.

Wild Plants

It has been pointed out (Heath & Emmet, 1979), that the geographical distribution of *dysodea* broadly corresponds with that of the wild lettuces *L. serriola* L. and *L. virosa* L. (Perring & Walters, 1976, Prince & Carter, 1977). Both of these possibly alien plants were first recorded during the first half of the 17th century and were not common or widespread; the increase in distribution to today's level commenced during the 1920's and followed the expansion of suitable habitats accompanying arterial roads (Salisbury, 1964). The distribution of *L. serriola* L. is especially coincidental with *dysodea* but that of *L. virosa* L., perhaps formerly the most frequent of the wild lettuce, declined in some western parts and a few localities in Suffolk at some time prior to 1930 (Perring & Walters, 1976) — it has been shown that the moth first disappeared from the west (Heath, 1974). However, this apart, there is no evidence of a national decline in the frequency or distribution of the wild lettuces coincidental with the disappearance of the small ranunculus, quite the reverse; moreover, there are only a few published records of larvae feeding on these wild plants, especially smooth hawks-beard — commercial and home-grown lettuce being much preferred — and the distributional coincidence is meteorological and not botanical. This is illustrated, for example, by the fact that the distribution of the insect is markedly similar to that of British vineyards during the Middle Ages (Lamb, 1965) — clearly a climatic coincidence.

Wild plants were never preferred in this country and the insect

was always local even in its commercially gardened strongholds, making successful dispersion to these plants when under pressure from lack of flowering domesticated lettuce less likely; but the main reason why the moth did not profitably transfer to wild plants was apparently because those it favoured were rare.

Lettuce grown for seed

The larva of *dysodea* feeds only on flower buds, heads, and unripe seed-pods of lettuce. Bolted lettuce, even before flowering, are of no use for human consumption due to the development of a bitter tasting substance. Therefore when *dysodea* was "a pest of lettuce" this would surely refer only to those plants grown for seed — the insect would scarcely be called a pest on an already written off plant.

Growing lettuce for seed was substantially confined to the counties of Essex, Kent, Cambridgeshire, and probably Suffolk. In Essex vegetable seed growing was mainly carried out at Coggleshall, Kelvedon, Marks Tey, Boxted, Lawford, and Frating (Pettit, 1941); in Kent seed crops were grown at Thanet and Romney Marsh (Stamp, 1943), and at Hoo, Sheppey and Sandwich (Hall & Russell, 1911) but these last three had ceased production at some time before the turn of the century; fields of vegetables grown for seed could be seen at Ipswich, in Suffolk (Butcher, 1941), but little is known about the seed gardens in Cambridgeshire apart from the fact that a small amount was farmed.

Unusually advantageous opportunities existed, and were sometimes utilised, for *dysodea* when lettuce was grown for seed; writing at the time, it was said of larvae that "when it is common the prospect of seed is sometimes quite destroyed" (Barret, 1897). Essex was by far the foremost county for vegetable and other seed growing during the 19th century, including lettuce, and the early history of the county's industry has been published (Glenny, 1907); it is probably typical of the whole industry. The wholesale growing for seeds commenced about 1780 and increased considerably over the following decades — this being a locally large industry in Essex by the 1820's. During this decade the industry continued its growth, especially at Kelvedon and Coggleshall, and later at Colchester and elsewhere. During the rest of that century the whole local eating vegetable industry had to move several times due to encroachment by housing, although it was still mainly confined to south Essex, and no doubt the seed growers were forced to follow suit. Lettuce seed growers soon had to contend with imported seed, from France, and by the turn of the century most came from that source. Before 1900, in Essex the moth was only reported from Walton-on-the-Naze on wild lettuce, and at Coggleshall and Colchester on *L. sativa* —

both seed growing districts — and the insect was not as widespread here in entomologically historical times as might have been thought, probably due to the disruption of the market-gardens. By 1907 there were 45 firms growing general seed in the county and these were still increasing, some probably migrating from south of the Thames, and more than 4000 acres were involved. Lettuce seed continued to be grown in this country over the following decades but at a much reduced level; the industry was still largely localised to Essex and heavy foreign imports continued to have an increasingly large impact. Through the Second World War years lettuce seed was probably imported from California but some was still produced here. Soon after the war, due to imports and the uncertainty of home produced lettuce seed, this part of the industry finally collapsed. Over the years the competition in lettuce seed had come from Spain, France, the USA, Italy, Australia, and New Zealand — all having a more equable climate. British growers were crucially dependant upon good weather to cure the seeds and decrease shattering, and many disasters must have been experienced due to our capricious climate and the attentions of other insects. For example, the maggots of the lettuce-fly (*Anthomyia lactucae*) were very destructive to the seed crop and sometimes caused its complete failure by devouring the seeds.

It has been suggested that the decline of the small ranunculus was linked to the demise of the British lettuce seed growing industry, but without supportive evidence. (Firmin et al, 1975). This could only have occurred in the four counties mentioned but the industry did dramatically decline at the latter end of the 19th century and subsequently, which certainly accounts for many, or all, of the local disappearances within those counties.

Eating Lettuce

The first known record of *Lactuca sativa* L., the worlds most popular salad plant, as a cultivated vegetable is in an Egyptian tomb painting dated about 4500 BC (Lindquist, 1960); its cultivation spread into Greece and Italy and then to the rest of Europe. Lettuce was introduced into English gardens in 1562 (Rhind, 1860) but the date of its very first arrival into this country is unknown although it may have been about 1440 (Webber, 1968).

Traditionally, commercially grown lettuce and that grown for seed has been predominantly farmed in the eastern counties due to the advantageous climate; the quantitative distribution in 1958 (Coppock, 1964), and to a lesser amount that about a quarter of a century earlier (Ministry of Agriculture & Fisheries, 1932), due to less detail, is similar to that of the small ranunculus moth — although the plant is also grown north of the insects apparent range limit. In the years leading up to 1930, up to 10,000 acres of land were

under commercially grown eating lettuce, the former figure probably being farmed since before the end of the 19th century.

Commencing at the end of the 16th century, commercial vegetable cultivation took place at localities then near London — Fulham, Kensington, Chelsea, Stepney, Bermondsey, Battersea, and Lambeth, have been mentioned (Fisher, 1935) — but most soon had to move as the city grew; by the mid 17th century gardens were also to be found at Putney, Sandwich, in Surrey and Bedfordshire, and elsewhere (Beavington, 1965). In the 18th century the Middlesex market-gardeners were famed for their lettuce and the gardens stretched from Teddington to the city. As London continued to grow the market-gardens previously strategically placed within a few miles of the metropolis, for reasons of accessibility to dung and for the quick transportation of perishable products, were forced to move further afield. By 1850 “the growth of gas-works, chemical works, and factories had so vitiated the atmosphere of the whole district as to prevent the satisfactory growth of vegetables even on such land as still remained available” (Glenny, 1907) and the growers were forced to move again. At this time most of the Brompton area was devoted to market-gardens but due to the continuing spread of house building they had to move in about 1868; this also happened to the gardeners at Hammersmith and Earls Court just after 1860, and to those at Rotherhithe in about 1880 (Olsen, 1976). The moths disappearance from the London suburbs, noted by Barrett who lived near Camberwell, was precisely coincidental with one of the main periods of market-garden removal. Many of the gardens which moved at this time recommenced on the north bank of the Thames, in Essex, joining the very early gardeners at Blackwater Valley — movements of 13 to 20 miles were mentioned. In 1907 it was said that “the last ten or twenty years have wrought further great changes in the market-gardening industry in Essex” (Glenny, 1907), it having become much less centralised, and many growers were ruined due to the better rail communications allowing the fresh arrival of vegetables, including lettuce, from both other counties and Europe. Nevertheless, large fields of lettuce could still be seen in Essex just after the turn of the century, which had been started out under glass — a relative innovation at that time. Lettuce growing was mostly confined to southern parts, spreading eastwards and to Tendring and central areas as time passed; as elsewhere, the gardens multiplied towards the close of the 19th century.

In north-west Kent market-gardening commenced in 1841 and five years later a highly cultivated strip stretched from Gravesend to Dartford. There were early gardens at Greenwich, Deptford, Lewisham, and Blackheath, but these were driven away by building in a south-easterly direction over the last half of the 19th century (Garrard, 1951), whilst later gardens tripled in number over the last

quarter (Orwin & Whetham, 1964) and stretched as far as the Darenth Valley (Hall & Russell, 1911). Lettuce was grown in hundreds of acres, these being concentrated at Wilmington, Sutton, the Hoo peninsula, and at the Isle of Thanet (Gerrard, 1951). The expansion of market-gardens continued over the following decades and especially after the First World War.

Surprisingly, only a small acreage of lettuce was grown in Cambridgeshire, it being a sideline at Ely. General vegetable production increased, locally on the fen and alluvial soils, from the second quarter of the 19th century until the four years war. However, methods had to be "adjusted to meet the greatly increased competition from overseas which had so seriously upset the balance of agriculture during the last quarter of the 19th century" (Pettit, 1941), although the number of gardens almost quadrupled over this period.

Market-gardening was not a major industry in Suffolk or Norfolk; however there were old established gardens at Sudbury, Ipswich, and Hadleigh, in the first mentioned county and locally large quantities of green vegetables were grown at Norwich, Hickling, Stalham, and Martham (Butcher, 1941; Mosby, 1938) in the latter.

A high amount of lettuce has been grown in south Surrey, early this century, but the earlier history is less certain. In Hertfordshire lettuce was grown in the Lea Valley from Enfield Wash to Hoddesdon, although much was out of season for *dysodea* and under glass; most growth occurred this century with gardens still moving away from London to the Upper Lea Valley during the 1920's. Lettuce was one of the principal vegetables grown in east Bedfordshire during the latter part of the 19th century and this continued well into this century. In Huntingdonshire commercial vegetable growing was insignificant except locally in some western places on the fen and alluvial soils. Lettuce was also grown, mainly under glass and out of season, at Frome, Taunton, and Bath, in Somerset, at Bristol and Cheltenham in Gloucestershire, at Swanley in Kent, at Willingham in Cambridgeshire, near the large towns in Wales, and at Exeter, Wimborne, and the Tamar Valley in the south-west, early this century. By the early 1930's Essex, still the highest producer, yielded only 15% of the total lettuce market, followed by Kent, Middlesex, and Sandy in Bedfordshire, and the whole industry had become considerably more disseminated.

Glasshouse cultivation originated as a commercial enterprise in Sussex, the Lea Valley, and north-west Kent, during the third quarter of the 19th century and then spread elsewhere (Webber, 1968). During the first third of this century at least, lettuce were almost exclusively grown to eating maturity under glass from autumn to spring — not during the insects flight time. Summer plantings were either directly drilled outside or were subsequently

transplanted outside after a glasshouse start, according to geographical situation (Ministry of Agriculture & Fisheries, 1932). It is thus difficult to see how this innovation could substantially affect the numbers of *dysodea*, as has been suggested (Heath & Emmet, 1979), even locally.

Although some districts changed their emphasis from one vegetable to another, and considerable local movement of market-gardens was experienced, the growers kept to the same general areas and the quantitative distribution of commercial lettuce in about 1930 (Ministry of Agriculture & Fisheries, 1932) and in 1958 (Coppock, 1964) would not have been dissimilar to that during the late 19th century, with some latterly increase to the southeast of London.

(to be continued)

Notes and Observations

EGIRA CONSPICILLARIS L. (THE SILVER CLOUD): NOTES ON THE FINDING OF EGGS IN THE WILD — I found several eggs batches of this species during May 1985 in a Herefordshire locality where I had obtained the moth in 1984. Eggs were deposited on old dock stems some way up on the plants, and were quite conspicuous. All batches were found along a narrow strip of land bisecting two fields. Nettle, *Rumex* and grasses were all that grew amongst adjacent fences. Two females of ab. *melaleuca* were also found, resting head down on fence posts not far from the two egg batches on May 14th. A further batch was found on 22nd May and two more the next night. Despite intensive searching of this piece of ground, no ovipositing females were seen or any pairings observed.

Some time was spent searching fence posts and old dock stems during the day, in company with B. Skinner and D. Chatelain, but we were unable to locate any other apparent breeding areas. The moth occurs in nearby woodland as well as in open country. Elm, the known larval foodplant is only present as a regenerated hedge along the road, and it seems likely that dock may be the natural foodplant for *conspicillaris* larvae in this district. Larvae from these egg batches were reared alongside offspring from wild-caught females and were supplied only with common elm. — J. PLATTS, 11 Maydowns Road, Whitstable, Kent.

A NOTE ABOUT SCYDMAENUS RUFUS MULL. & KUNZE. (COL.: SCYDMAENIDAE) — In Britain, *Scydmaenus rufus* has traditionally been associated with old trees. Joy (1932, *A Practical Handbook of British Beetles*) gives as its habitat "rotten wood". Donisthorpe (1939, *A Preliminary List of the Coleoptera of Windsor Forest*) recorded it from under oak bark and it was in such a situation that I first encountered it (three examples) at Wisley, Surrey in June 1974 in company with the ant *Lasius brunneus* Latr.

It seems not well appreciated, however, that the beetle is also to be found among dung and other farmyard debris. I found 5 examples in a small volume of sievings from a heap of old manure and rotten hay near Headley, Surrey in January 1985. It was presumably breeding there for, in November, a further few handfuls of sievings produced another 20 specimens. My friend Peter Hammond has told me that, in 1983, he found a number of examples in a manure heap in Richmond Park (where we have both taken it in its traditional habitat). On the continent, it is stated to occur 'in dry dung and compost; also in rotten wood' (Franz and Besuchet, 1970 in *Die Käfer Mitteleuropas* 3 ed. Freude, Harde & Lohse).

I wonder if the breeding of *S. rufus* in farmyard debris is a relatively new phenomenon. In Britain, *S. rufus* has a reputation for being rare. Fowler (1889, *The Coleoptera of the British Isles*) wrote that he knew of only two British specimens and, later, the late Revd. E. J. Pearce (1974, *Entomol. mon. Mag.* 110: 13) recorded that, in his many years of collecting, he had found only one example. The collectors of Fowler's time, and of the generation which followed, were certainly familiar with beetles of farmyard debris. In the days of the horse, there were almost certainly many manure heaps about, which suggests that the beetle used not to occur in this habitat. It would be interesting to know whether there is any evidence of a similar change in habitat preference on the continent. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey, KT17 3PU.

EDINBURGH'S CLOUDED, DRAB SUMMER. — On 15.viii.1985 I found a fully grown larva of the noctuid moth *Orthosia incerta* (Hufnagel) on a footpath beneath an avenue of trees running across The Meadows, Edinburgh. Lime (*Tilia x europaea*) was overhead, but sycamore (*Acer pseudoplatanus*) and wych elm (*Ulmus glabra*) were nearby. The caterpillar was alive (though terminally mauled by passing feet) and I could find no evidence of any disease or parasitism that might have delayed its development. Mid August is a remarkably late date for larvae of this species, and it illustrates very well what a flop the early part of the summer of 1985 was, particularly in Scotland.

In fact the late part of the summer was no better, and 24 days on I nearly lost my marbles altogether when I found a queen wasp in hibernation in my chilly greenhouse on 9.ix.1985; only discovering later that it is not unusual for that particular species, *Vespula rufa* (L.), to enter hibernation as early as August. At the time I suffered only a flash of 'surely it can't still be waiting for spring 1985 like the rest of us', but it took longer to quell the despair that we were not even going to get autumn this year. Eventually I got it all under control to be merely encouraged to see that social wasps, all of which have been very scarce locally, have managed to produce queens at all in this sunless year! M. R. SHAW, Royal Museum of Scotland, Chambers Street, Edinburgh EH1 1JF.

THE LARVA OF PYRRHIA UMBRA (HUFN.), THE BORDERED SALLOW, ON YOUNG HAZEL COPPICE — On 1st August 1984 four larvae of the bordered sallow ranging in size from 0.5 to 2.5 cm were beaten from young hazel coppice approx. 1.5 m tall. The bushes were situated in a recently clear-felled area in the centre of Waterperry Wood, Oxfordshire. The larvae ate three young geometrid larvae collected from the same bushes and were reared on hazel (*Corylus avellana* L.) until pupation at the end of August. Moths emerged from 29 to 31 July 1985.

The larva is usually said to feed on restharrow, *Ononis arvensis* and *O. spinosa* (Newman, E. (1869) *An illustrated history of the British butterflies and moths*; Wilson, O.S. (1880) *The larvae of the British Lepidoptera and their foodplants*; Buckler, W. (1886-1901) *The larvae of the British butterflies and moths*; Barrett, C. G. (1895-1904) *The Lepidoptera of the British Isles*; Stokoe, W. J. and Stovin, G. H. T. (1948) *The Caterpillars of the British moths*; Allan, P.B.M. (1949) *Larval foodplants*; South R. (1961) *The moths of the British Isles* and Skinner, B. & Wilson, D. (1984) *A colour identification guide to the moths of the British Isles*). Buckler notes an individual from sallow; South mentions an occasion when larvae were found on young sweet-chestnut growth and Allan mentions "stool oak". Barrett reports that the Rev. J. Hellins (1829-1887) had beaten larvae from both birch and hazel and reared them on those trees.

Mr. J. M. Cambell, of the local biological recording centre at Woodstock Museum informs me that restharrow has never been recorded from Waterperry Wood or any of the neighbouring woods such as Hell Coppice, Shabbington Wood, Stanton Great Wood or Holly Wood, all of which have been covered by recent botanical surveys.

These observations suggest that *umbra* is not simply a specialist on restharrow as might appear from current literature. It is able to feed more widely and may breed in areas where restharrow is not present. This may help to explain its widespread if rather sparing occurrence. P. WARING, Park Farm House, Banbury Road, Kidlington, Oxford OX5 1AH.

POPULATION EXPLOSION OF HYPENA ROSTRALIS L. (BUT-TONED SNOUT) IN THE CHILTERNs — In the Marlow area of Buckinghamshire there has been a remarkable upsurge in the population of *H. rostralis* this autumn. In the very warm September/October which followed a dismal summer, the numbers soared from an average record of 6 or 7 annually to an unprecedented 170 plus, in a wide range of shades and patterns. Of these moths plenty came to sugar and ivy blossom, as is usually the case, but not one was attracted to light, although a m.v. trap was operated regularly in the area. The vast majority were found on over-ripe blackberries, which were exceptionally late (and abundant) this year.

After the very warm and productive October, November was cold and wet throughout, with frost most nights, to be followed in turn by a muggy, misty early December. This in turn produced another delayed mass-emergence, mainly of the usual winter geometers, but also of *Brachionycha sphinx*, with several deep-chocolate specimens of ab. *fusca*, and notably of *Ptilophora plumigera*, which appeared at light in huge numbers (91 on 2nd December).

It is perhaps worth adding that in this area there has also been a spectacular increase in the number of glow-worms during the wet summer. This beautiful addition to our evenings was a real compensation for the rotten weather! — DAVID WEDD, The Lodge, Sentry Hill, Marlow.

A HITHERTO UNRECORDED FOODPLANT OF COLEOPHORA TAENIIPENNELLA H.S. (LEP., COLEOPHORIDAE). — On the 5th of October 1985 I came upon a strong colony of this species feeding on bulbous rush (*Juncus bulbosus*) in Epping Forest. The rush there is of the viviparous form and only the ungerminated seeds offer a suitable pabulum to the larvae. A second visit on the 23rd of October showed very few seedheads in edible condition and the number of larval cases greatly reduced. Because of the relatively narrow girth of the seed-capsules, the cases formed within are more elongate than those occurring on *J. articulatus*, with the silk projecting further beyond the husk at each end, that at the oral end being heavily encrusted with seeds. This fairly widespread species appears to have gone unrecorded in south Essex (VC18) since about 1900, when Whittle found it in the Southend area. A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

PHYLLONORYCTER COMPARELLA DUP. FEEDING ON POPULUS NIGRA. — I noticed mines on a hybrid black poplar at Box Hill on the 2nd. October 1985. Returning to collect some on the 10th. I found them fairly plentiful on one tree, with about a third showing that they had emerged already. The moths proved to be *comparella* of which there is a colony nearby on the usual grey poplar. MBGBI 2 gives *P. alba* and *canescens* as foodplants and Emmet's *Field Guide to the Smaller British Lepidoptera* mentions *P. nigra* as a possibility. It is pleasing to turn the possibility into certainty. R. FAIRCLOUGH, Blencathra, Deanoak Lane, Leigh, Surrey, RH2 8PZ.

EUPITHECIA DISTINCTARIA H.S.: THYME PUG (LEP.: GEOMETRIDAE) IN ROSS-SHIRE — A single male of this species was caught in the Rothamsted Insect Survey light trap at Inchbae, near Garve, (Site No. 431, O.S. ref NH 404 693) on the night of 11/12-vii-1985. Identification was confirmed by examination of the genitalia. So far as I am aware *E. distinctaria* has not previously been recorded for Ross-shire. It can be very difficult to distinguish adults of this species from other *Eupithecia*'s and this has undoubtedly led to it being overlooked in many localities.

Thanks are extended to Mr. H. Grainge who operates the trap at Inchbae and to Mr. B. Skinner for his comments on the known distribution of *E. distinctaria*. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts.

A FURTHER RECORD OF ANARSIA LINEATELLA ZELLER (LEP., GELECHIIDAE). — On the 26th of September 1985 Mr. K. G. W. Evans gave me a living specimen of this species which he had reared from a larva in an imported peach purchased in Croydon. Prior to 1985, the only British record seems to have been of one reared by Mr. R. W. J. Uffen on the 8th of August 1957 from an imported apricot (*Entomologist's Gaz.* 10: 57-58). The larvae feed in at least two generations in rosaceous fruit-trees, the first in a series of shoots and the second in shoots like the first or within a fruit, where it can be a minor pest. It is widespread in the Mediterranean region. The adult is recognisable from its general resemblance to *A. spartiella* (Schrank) and the longitudinal dark streaks on the forewing from which its name is derived. A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

THE LARVAL FOODPLANTS OF ERYNNIS TAGES LINN. — On one of the many rainy days spent studying the Scotch Argus (*Erebia aethiops* Esp.) at Smardale in Westmorland, Cumbria a search was made for the larvae of the Dingy Skipper (*Erynnis tages*). It may therefore be of interest to note that of the 57 larvae found, in the 90 or so minutes spent looking, 46 were found on Horseshoe Vetch (*Hippocrepis comosa*) whereas only 11 were found on the more typical foodplant Bird's-foot-trefoil (*Lotus corniculatus*) — roughly an equal amount of time being spent searching both plant species. It would therefore appear that where given the choice of foodplants *Hippocrepis comosa* is preferred. This preference has similarly been noted by others (J. A. Thomas, *pers. comm.*). — N. W. LEAR, 178, St. John's Lane, Bedminster, Bristol BS 5AR.

THE RED-BELTED CLEARWING SYNANTHEDON MYOPAEFORMIS (BORK.) IN HEREFORDSHIRE (V.C. 36). — During a visit to Moccas Park (now Moccas Park National Nature Reserve) in 1976, I captured a single example of this pretty little moth after it alighted on the trunk of the solitary carb apple tree growing there. Despite sending my record off to the Lepidoptera Mapping Scheme, I notice in the *Butterflies and Moths of Great Britain and Ireland*, 2: 381/2 (1985), that the moth is apparently unrecorded in VC 36. With the abundance of ancient orchards in Herefordshire, its occurrence is to be expected and I understand my friend Dr. Harper has recently encountered the species too. J. COOTER, 222 Whittern Way, Hereford, HR1 1QP.

Current Literature

The Butterflies of Dorset by **Jeremy Thomas** and **Nigel Webb**. 144 pp. 56 col. illust. 47 maps. A5. Published by the Dorset Natural History and Archaeological Society. £8.00 (boards) £6.00 (pbk).

Said to be the richest county for resident butterflies in Britain, Dorset has long needed a new local list. This excellent survey provides it, being the lineal descendant of both C. W. Dale's *Lepidoptera of Dorsetshire* (1886) and the revised list of W. Parkinson Curtis (completed just before his death in 1968 but unfortunately never published). The book refers constantly to these source works for distribution and frequency of butterflies in the past, while the modern records are provided by the Dorset Environmental Records Centre and staff at Furzebrook Research Station. These sources are acknowledged in the introductory section of the book along with a general survey of the county itself (climate, geology and topography,) with particular reference to the rich Dorset butterfly fauna.

In similar style to the recently published *Atlas of British Butterflies*, the main part of the book consists of a distribution map and a page of text for each resident Dorset butterfly. Most species also have a histogram of flight period. These are a composite of regular counts made over 9 years, and thus give a good general idea of the best time to search for that particular species. Adjoining the histograms are two small separate passages entitled respectively "Where To See" and "When To See". The first of these either gives general indications for the more abundant species, or localities of relatively easy access for the rarer, local butterflies. Collecting the latter is discouraged throughout the book incidentally. The 'When To See' paragraph expands and discusses what is usually evident in the flight period histogram.

The county maps are presented opposite the text and are divided into 1km. squares with symbols for no less than 4 date classes i.e. pre-1900, 1900-1939, 1940-1969, and 1970-1984. That many of the maps are unavoidably incomplete is acknowledged, particularly in the case of the common and widespread species, but in general the recent records for rarer and local butterflies are accurate. One fault, in my opinion, is combining the Essex and small skipper records on one map — this on the grounds that they are difficult to separate in the field and knowledge of the former in Dorset is limited. Present knowledge of the range of the Essex skipper in southern England has in some cases been ascertained by lepidopterist 'working out' from known sites to adjacent suitable areas, and this might possibly have been achieved in Dorset if a separate

map had been furnished. With some practice these two species are no more difficult to separate in the field than, for example, *Clossiana selene* and *Clossiana euphrosyne*, and certainly easier than guessing the identification of fast-flying *Argynnis adippe* or *aglaia*.

The text associated with these otherwise excellent maps is full of interesting ecological points, with emphasis of course on special features of the butterfly in Dorset. A brief county history of the insect is also given, with comparison of past status and comments on current conservation problems, and reasons for decline where applicable. There is a short interesting section on extinct Dorset butterflies (the known history for each species summarised) and comments on rare migrants, vagrants and accidentals. There is also a brief specific chapter on conservation. All Dorset butterflies are illustrated in a colour photograph section. Most of these are good clear illustrations, but scale is not given, neither are details of date or locality. I understand that these plates are simply intended for identification purposes and do not therefore necessarily depict Dorset insects. Altogether I found the book interesting, informative, and a most useful reference source. Both hard bound and paperback versions have a colour photograph of mating marbled whites taking up the front cover. C. J. LUCKENS.

Les Papillons by **Helgard Reicholf-Riehm**. Translation by **Gerard Chr. Luquet**. Published by SOLAR — Price 60F.

Essentially this is a book of pleasing colour photographs of butterflies, moths and some of the more spectacular larvae. Most photographs of the adult insects are of living examples but where set specimens have been employed they are shown to good advantage on a dark background. Some of the illustrations of larvae are excellent, especially those of the *Catocala* species and the flamboyant *Sphingidae*. The compact text is informative and gives essential details of habitat, foodplants, distribution etc., and the specific section of the book is flanked by short synopses of biology and classification of Lepidoptera.

Both macro and micro Lepidoptera are included in this guide, but space limitation requires the restriction of the latter to a tiny fraction of the European List, and the macro moths are similarly confined to the more striking species. Even the butterflies included are only some 25% of the European total. This is the unavoidable flaw in guides such as these which attempt to cover an enormous potential in three hundred-odd pages. In this respect its usefulness for identification purposes is reduced but the book is nevertheless an attractively produced and well-written volume. This French edition has been translated and adapted by Gerard Luquet from the original German guide by Helgard Reicholf-Riehm. — C. J. LUCKENS.

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AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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A REVIEW OF THE STATUS OF *EUPITHECIA*
GOOSSENSIATA MAB. (THE LING PUG) AND
E. ABSINTHIATA C1. (THE WORMWOOD PUG)
(LEP.: GEOMETRIDAE)

By ADRIAN M. RILEY*

Introduction

Whilst reviewing the British Pugs, I recently re-examined *Eupithecia goossensiata* Mab. and *Eupithecia absinthiata* Clerck. These two moths are usually considered to be separate species though the distinction has always been dubious; indeed Pierce (1911) and Dietze (1913) classified them as one. Against a background of early and rare literature, this paper re-examines their classification.

Structural and morphological criteria for separation of adults

Adult *E. goossensiata* are usually distinguished from *absinthiata* by their slightly smaller size, greyer ground colour and more clearly defined markings (Meyrick 1928, South 1961, Anon. 1981 & Skinner 1984). Although these points may be valid for fresh specimens they are of little use when the insects are worn. Superficially the genitalia appear very similar. Slides of genitalia prepared from "good" specimens of each species from my own collection and Rothamsted Insect Survey light trap catches showed no consistent characters by which they could be separated, despite differences (some allegedly quite obvious) illustrated by previous authorities (Bleszynski 1965 & Anon. 1981). Although Skinner *et al.*, in the "*Identification Guide to the British Pugs*" state that there are no distinguishing structural features, differences are still illustrated in the figures of genitalia prepared by Agassiz & Dyke (Anon. 1981). Some slight natural variation exists in the male and female genitalia and in the male abdominal plates. This, along with variation in slide mounting techniques and possibly an unquestioning acceptance that the two are distinct species, probably led to these erroneous illustrations. Peterson (1909) suggests that they cannot be separated by means of genitalia.

Effects of foodplants on larval morphology

The two most significant differences between *goossensiata* and *absinthiata* are their foodplants and the ground colour of the larvae and it is these jointly that constitute the major part of the argument for separation as species. In the natural state *absinthiata* feeds on

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many of the *Compositae* while *goossensiata* feeds only on a few *Ericaceae*, normally *Calluna vulgaris* (Newman 1869, Anon. 1981, Skinner 1984), but also *Erica tetralix* and *E. cineria* (Tutt 1096, Meyrick 1928, Stokoe 1948, South 1961). The larvae themselves are quite different in colour — *absinthiata* ranging from yellowish green to ochreous brown with darker dorsal chevrons, *goossensiata* being purplish pink with similar, though slightly more distinct, chevrons (Meyrick 1928, Stokoe 1948, South 1961, Anon. 1981 & Skinner 1984).

If the larvae are fed on each other's foodplants, a colour change occurs (Reid, *pers. comm.*). *Goossensiata* larvae fed from hatching on *Senecio jacobaea* or *Solidago virgaurea* lose their purplish pink ground colour, becoming whitish brown with pale chevrons (see also Baker (1895). *Minutata* Hübn = *goossensiata* Mab.) while those of *absinthiata* reared on the flowers of *C. vulgaris* are slightly smaller and adopt a pinkish hue. Rearing experiments similar to these with comparable results were described by Karl Dietze (1913). Although Dietze's work "*Biologie der Eupitheciën*" is still considered to be one of the most important publications on the pugs, his convincing arguments that *absinthiata* and *goossensiata* are not distinct seem to have been forgotten.

Absinthiata larvae are extremely variable in colour, whereas those of *goossensiata* are not. Haggett (*pers comm.*) has suggested that this may show behaviour indicative of separate species, but it seems probable that as the former has such catholic tastes, this variation may again be the result of the photophagic effects of the chosen foodplant. In the wild any one species of plant will produce a dominant colour form of *absinthiata* larvae with only limited variation (*S. jacobaea* will produce yellowish while *Tanacetum vulgare* produces pinkish larvae (Freer 1892)). This is also evident in *Eupithecia centaureata* D. & S. in which, for example, *S. jacobaea* and *S. virgaurea* produce larvae which are yellowish or bluish green whereas *Pimpinella saxifraga* produces a form which is greenish or pinkish white (Newman 1869). As long ago as the end of the last century it was known that such photophagic effects existed (Tutt 1899) so it is surprising that the larval ground colour of *absinthiata* and *goossensiata* should still constitute such a major part of the argument for classifying them as separate species.

Effects of larval foodplants on adult morphology

The expression of colour dependent upon the larval foodplant appears, in the case of *absinthiata* and *goossensiata*, to continue through the pupal (there are no structural dissimilarities and the differences in colour may, again, be a result of the larval foodplant) and into the adult stage. Reid found that adults of *absinthiata* developing from larvae fed on *C. vulgaris* were slightly smaller

than the normal form with a much paler ground colour (approaching *goossensiata*). The *goossensiata* adults from *S. jacobaea* and *S. virgaurea* were slightly larger and of a richer brown than typical *Calluna*-fed individuals (approaching *absinthiata*).

It is interesting to note that pink (apparently *goossensiata*) larvae have been found on foodplants which would normally be associated with *absinthiata*. (*S. jacobaea* and *Artemisia vulgaris* (Haggett and Riley *pers. comm.*), *Scabiosa* (Meyrick 1928), *Succisa pratensis* (Stokoe 1948)) and *Achillea millefolium* (Baker 1895). It appears, however, that "true" *goossensiata* adults have rarely resulted from any larvae, no matter what colour, other than those fed on *Ericaceae* (Haggett, *pers. comm.*). This suggests that, in this case, the larval foodplant has an important influence on the colour and size of the adult moths.

Attempts at cross-breeding

The only known attempt to inter-breed these two pugs resulted in a mating but unfortunately the eggs did not hatch (Reid, *pers. comm.*). Further attempts to produce successful matings must be made in order to ascertain the fertility of the offspring from such a cross.

Conclusions

The specific status of *E. knautiata* Gregs. (the scabious pug) was challenged after its supposed discovery in 1894. Gregson (1894 and 1895), Harpur-Crewe (1894), Johnson (1895) and Bird (1895) give an account of the discussion. It is the opinion of modern-day entomologists that *knautiata* was merely a field scabious-feeding form of *absinthiata* (Anon. 1981). It is interesting to note that the arguments proposed in reaching this conclusion were very similar to those presented here to challenge the specific status of *goossensiata*. It is my opinion that, although *absinthiata* and *goossensiata* may, at present, be in the process of speciation and could be regarded as two ecospecies, they are not structurally or morphologically distinct enough to warrant specific status.

As *absinthiata* appears earlier (1759) in the nomenclature than *goossensiata* (1869) (Kloet & Hinks 1972), this name should be used to represent the species.

Status of *goossensiata*

Goossensiata and *absinthiata* have been caught consistently in more or less equal numbers and during the same months each year over several years in many of the Rothamsted Insect Survey light traps (e.g. Yarnar Wood, Devon. Site No. 266, O.S. grid ref. SX 786

788). They have also been observed in the field in overlapping habitats (Skinner, *pers. comm.*). This illustrates conclusively that there are no allopatric or allochronic divisions between two. By definition, then, *goossensiata* should not be considered a subspecies (Mayr 1969), but, in my opinion, merely a heathland form of *absinthiata* whose morphological characteristics are dictated by the larval foodplant.

Acknowledgements

Thanks are extended to Mr. J. Reid of Royston, Herts., whose experiments with the larvae of these pugs proved invaluable to the completeness of this paper. The comments and observations of Mr. B. Skinner, Mr. G. Haggett and Mr. D. S. Fletcher have also been most helpful. The voluntary efforts of Mr. D. Rogers at Yarner Wood and all the other Rothamsted Insect Survey light trap operators are also greatly appreciated.

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NOTE: in an interesting paper (Fibiger, M. *Lepidoptera N. S.* III 307-311 (1980) and Kaaber, S. *Lepidoptera N. S.* IV 41-29 (1982)) the authors consider the status of the *Eupithecia* couples *absinthiata/goossensiata* and *innotata/fraxinata*. Their major conclusion on the former pair, based on morphology, genitalia examination and captive breeding is that *E. goossensiata* is but a race or subspecies of *absinthiata*. In Denmark *goossensiata* is widely distributed on sandy soil, whereas *absinthiata* is mainly restricted to woodland habitats on clay soil. PAS.

OCHTHERA SPP. (DIPT.: EPHYDRIDAE): A CORRECTION. — In 1983, *Ent. Rec.* 95: 154 I reported a specimen of the uncommon fly *Ochthera mantis* Deg. from Catfield Fen, Norfolk, remarking that I had no knowledge of its distribution. Since that was written, however, Dr. A. G. Irwin has published an important paper in which he distinguishes a third British species of the genus, *Ochthera manicata* F., and shows that all captures in E. Anglia known to him, centring on this small area of N. E. Norfolk, are referable to *O. manicata* (1985, *Ent. mon. Mag.* 121: 151-4). It therefore is no surprise that my Catfield specimen is now found to belong to the last-named species and not *O. mantis*; particularly as it has occurred at the same locality to both Dr. Irwin and also Dr. J. W. Ismay (Irwin, *l.c.*). *O. mantis* on the other hand, though thinly scattered over the British Isles, is not hitherto known from that region. — A. A. ALLEN.

NOTES ON THE BIOLOGY OF
HARMINIUS UNDULATUS
(DEGEER)

By J. A. OWEN*

H. undulatus is one of the more local British elaterids, occurring in upland woodlands in northern England (one record) and highland Scotland. These notes are based on observations during 1982 to 1985 at six Scottish sites, from experience gained in rearing adults from wild larvae and from the collated observations of others. Though the evidence is somewhat fragmentary, and in places anecdotal, the picture should at least be of help to anyone wishing to investigate the life history of the species in greater detail.

Habitat

The early stages of the beetle occur in dead timber. Larvae, adults and, more rarely, pupae have been recorded in Britain mostly from dead birch (e.g. Blackburn, 1866; Leech, 1969; Orton, 1971; Skidmore, 1978) and this has been my experience exclusively with about 25 larvae, but the beetle is also recorded in association with Scots pine (Hunter, 1977). On the Continent, it is reported to occur in both coniferous and broad-leaved trees (Lohse, 1977). The larvae live usually under the bark or in the dead wood immediately beneath the bark of trunks of trees lying on the ground but occasionally occur in suitable standing dead trees. They prefer trunks with fairly thick bark, possibly because this maintains more suitable (? damper) subcortical conditions over the several years which the larvae take to mature. I have found half to full grown larvae in trunks of trees which looked as if they had been fallen for 3 to 10 years. I have the impression that they occur more often in the trunks of birch trees which have been deliberately felled than in those which have died and then fallen over, perhaps because felled dead trees are more attractive to the adult for oviposition than trees which have been dead some time and have dried out before falling over.

The sites where I have come across *Harminius* as early stages or adults have been in central highland Scotland in birch woods on variously facing slopes at altitudes from 100 to 400 m in areas with mean annual rainfall of 1200 to 1800 mm. It could be that a relatively high rainfall helps to maintain fallen birch trunks in an appropriate state for the larvae and this could explain the apparent absence of *Harminius* from Speyside and Deeside which are drier.

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Larvae

The larvae of *Harminius* are of typical Athoine larval shape, in their later stages shiny black on the dorsal surface and pale yellow-ochre below. To the naked eye, they are similar in appearance to those of the related species *Stenagostus villosus* (Fourcroy) and, in the case of smaller examples, to those of *Denticollis linearis* (Linnaeus). Larvae of the three species, however, can be readily distinguished on various microscopic features, especially the shape of the terminal abdominal segment (Van Emden, 1944). Larvae of *Denticollis* which occur in dead birch and pine wood in the same areas as *Harminius* tend to burrow more deeply into the rotten timber. Larvae of *Stenagostus* live immediately under the bark especially of dead hardwoods such as beech and oak but the distribution of this species in Britain is southern and does not overlap with that of *Harminius*, so that there should not be confusion in the field.

In captivity I have kept larvae in large (Nescafé) jars two-thirds filled with soft rotten birch wood and latterly, also, with a few harder lumps. The jars were kept capped to reduce the rate of the wood drying out but the plastic caps had a series of 3mm diameter holes for ventilation. The material was kept moist by occasionally pouring a little water onto the inside wall of the container holding the latter at an angle so that the water ran down the inside of the jar to the foot. This maintained the material at the bottom of the jar damper than the material at the top allowing the larvae to choose the preferred degree of dampness. The jars were normally kept in an unheated garage but some were transferred to a relatively warm sunroom for some months at the end of winter and through spring. Periodically (every 3 or 4 weeks in the summer and less frequently in the winter) a small piece of cheese was placed on the surface of the material in the jar. This went soft and mouldy after a few days and usually attracted small diptera which gained access through the ventilation holes and laid eggs on the cheese. Larvae developed from these eggs and eventually pupae developed.

I have never seen a *Harminius* larva feeding but larvae of the moth *Aegeria culiciformis* (Linnaeus) and of the beetle *Scolytus ratzeburgi* Janson (both of which inhabit the subcortical layer of dead birch trunks) placed in the same container disappeared within a few days. In contrast, larvae of the beetles *Sinodendron cylindricum* (L.) and *Rhagium mordax* (Degeer) survived as did maggots of a *Calliphora* sp. Occasionally what appeared to be small nibble marks were visible on the pieces of cheese placed in the container after the cheese had gone soft but a larva was never seen in the act of nibbling even though the jars were often examined by torch light after dark. It is possible that the *Harminius* larvae eat some of the

small dipterous larvae associated with the mouldy cheese. Up to four *Harminius* larvae were kept in the same jar and no evidence of cannibalism was ever noted.

From the rate of growth of larvae in captivity, it would seem that the complete larval stage lasts 4-5 years. The captive larvae, however, may have had a better food supply than those in the wild and it could be that, under adverse conditions, the larval stage lasts longer than 5 years.

Pupation

The pupa like those of many wood inhabiting beetle species is colourless except for one or two tiny yellow marks on the dorsum of the pronotum. I have only once found a pupa under natural conditions. This was in Glen Lyon, Perthshire on the 28/iv/83. It was discovered on removal of the bark from a large dead birch log lying on the ground on a south facing slope and was in a chamber eaten out of relatively hard wood immediately beneath the bark at a position where the trunk would be warmed by the sun's rays. Leech (1969) has described the discovery of a pupa of this species in a birch log on 18/v/69.

In captivity, with one exception, pupation occurred towards the end of April or during May. If there were hard lumps of wood in the jar, the pupal chamber (found in retrospect) was usually in one of these but, if there were no lumps of wood in the jar, the pupal chamber was usually at the foot of the jar as if the larva had burrowed as far as it could trying to find harder wood. When this happened the pupating larva and the pupa were partly visible through the foot of the jar, which made it possible to determine the duration of the pupal stage without disturbance.

I have been unable to make any observations in the wild on the duration of pupation, but the pupa which I found in Glen Lyon hatched 12 days later and two of the pupae which developed in captivity had pupal stages of about 16 and 24 days respectively. It is possible that pupae in the wild develop more slowly because the habitat is at a lower mean temperature than in captivity. Warming of logs containing larvae by the sun's heat, however, could mean that pupae in the wild are kept on the average, above air temperature. The pupa reported by Leech (1969) produced an adult 22 days later.

One larva behaved differently. Soon after capture at the beginning of July 1982 it burrowed into a thick layer of bark and remained without sign of activity until the following July. Believing that it must have succumbed, I broke open the bark on 20/vii/83 and discovered a live pupa, which presumably had developed not much earlier than the end of June. Unfortunately it was damaged in the process and died a few days later. It may be that, in the wild,

larvae form pupal chambers in late summer but do not pupate until the following spring. Another example of pupation in July has been related to me by my friend Mr. R. M. Lyszkowski who put a larva in a tube when he went on holiday at the beginning of July. When he returned two weeks later there was an adult in the tube. I am inclined to believe, however, that these two instances of pupation in July represented anomalous behaviour related to captivity and that, in the wild, pupation normally takes place in late spring or early summer.

Adults

In captivity, adults remain in their pupal chambers for up to several weeks and then appear on the surface of the material in the jar. If they are removed from the chamber and kept in a cool, moist environment, they remain alive for several weeks. There is evidence that, in the wild, adults similarly remain in their pupal chambers for a period. Dr. P. Orton (1971) has recorded finding a number of adults under thick bark of birch logs at the beginning of June and I have found adults under a large piece of firmly attached bark at the beginning of July in circumstances strongly suggesting that the adults had developed under the bark rather than crawled under to hide. Lohse (1977) states that on the continent the adults are found in dead wood in May and at large later in the season.

I have not met with an adult in the open but I have kept adults (1 male and 3 females) under observation for about 10 days in a disused aquarium containing portions of a dead birch log. During the daytime, the females in particular were intermittently quite active, running over the dead wood and round their 'cage' in a series of somewhat jerky, wasp-like movement. When the aquarium was placed in direct sunlight, the females often took to flight (as far as the 'cage' allowed). When it got dark, the beetles hid in crevices in the bark or under the logs. Inspection at night with the aid of a torch failed to reveal any nocturnal activity.

The only account I have of the adults being seen at large in Britain was from Mr. Lyszkowski who, one hot day in July, saw many adults flying in the sunshine at a site in central Scotland. The absence of other records of daytime activity in Britain may simply be because the beetle is rare and inhabits somewhat remote areas where appropriate conditions for flight are uncommon.

Only two of the 16 adults which I have reared from larvae (and 1 pupa) collected in the wild have been males. While this preponderance of females may simply have been a chance phenomenon, it may be significant. Among other insects, an unequal sex incidence among captured adults, has often been shown later to result from the different sexes having different habits. It is

possible, but a little unlikely, that male *Harminius* larvae have different habits from female larvae, which make them harder to find. The overall mortality of larvae and pupae in captivity has proved less than 25% so that, even if all those which died were males, there would still be a preponderance of females. Another possibility is that the species is partly parthenogenetic.

In their biologies, the elaterids *Harminius*, *Stenagostus* and *Elater* (= *Ludius*) present a number of similarities. In Britain, anyway, all three species are much more commonly found as larvae than as adults. Indeed, in the case of *Elater*, there appear to have been only two occasions (apart from ancient records) where adults have been observed at large and on only one of these was more than one adult seen (Verdcourt, 1983). The other occasion involved a single injured adult (Tyler, 1955). *Stenagostus* and *Elater* presumably fly almost invariably at night and this has been reported also for *Harminius* (Lohse, 1977) though my captive adults were apparently inactive in the dark.

As has been pointed out by my friend Mr. A. A. Allen (1952), in most of British elaterid species pupation occurs in July or August and adults, developing 3-4 weeks later, remain in their pupal chamber until the following summer. Larvae of *Harminius*, *Stenagostus*, and *Elater*, (and also *Denticollis*) however, pupate in late spring or in the first half of summer and the adults emerge that summer and do not hibernate. The relative advantages of these two forms of behaviour remain to be determined.

Associated beetle species

The habitat of *Harminius* larvae is shared with the larvae of various other beetles including *Sinodendron cylindricum* (L.), *Melanotus erythropus* Gmelin (= *rufipes* Herbst.), *Rhagium mordax* Degeer, *R. bifasciatum* Fabricius and *Schizotus pectinicornis* Linnaeus and many of the trunks had the borings of *Hylecoetes dermestoides* (Linnaeus) and of *Xyloterus lineatus* (Olivier). It is possible that *Harminius* larvae prey on the larvae of some of these species. It is probable that the larvae of *M. erythropus*, in turn, are predatory on the larvae of *Harminius*; three large *Melanotus* larvae were placed in a container in which three *Harminius* larvae had placed a few days previously. After six weeks, all three *Melanotus* larvae remained but only one *Harminius* larva could be found.

Summary

In Scotland, at least, *Harminius* larvae live mostly in the sub-cortical region of dead birch wood taking 4 or 5 years to reach maturity. Pupation occurs in the spring or early summer. Adults develop in about three weeks but remain inactive for a period. Adults are rarely seen at large. This is probably a consequence

of their rarity and of the remoteness of their habitat but they may fly at night.

Acknowledgements

I must thank Mr. R. M. Lyszkowski for telling me about his unpublished observations and Mr. A. A. Allen for drawing my attention to the note by M. J. Leech and for valuable comments on the manuscript.

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CLOUDED YELLOWS IN FIFE IN 1982 — In the recent supplementary note on immigration of Lepidoptera to the British Isles, Bretherton and Chalmers-Hunt (*Ent. Rec.* **97**: 76-84) give Westmorland as the northern most sighting for *Colias croceus* for 1982, which prompts me to submit the following records. Dr. M. P. Harris saw a clouded yellow on the Isle of May on 3rd June, which was the first recorded on the island; Mrs. M. Wilkinson reported *C. croceus* over several days in early August in her garden in Dunfermline, Fife. Surprisingly I received no reports of this species during the 1983 invasion. P. K. KINNEAR, 11 Hillview Road, Balmullo, St. Andrews, Fife, KY16 0DE.

THE OCCURRENCE OF *OPSIPHANES TAMARINDI*
FELDER & FELDER (LEPIDOPTERA: SATYRIDAE)
IN BRITAIN

By C. ROGER BRISTOW*

Opsiphanes tamarindi is a large (forewing length 40-60mm), polytypic, neotropical species of the Satyrid subfamily brassolinae, with a range from Mexico to southern Peru. The larval foodplants commonly include banana, and the larvae sometimes occur in sufficient numbers to be a serious pest. It is not surprising therefore that *tamarindi* occasionally occurs as an accidental import with bananas. To date, I know of five records for Britain: Eastbourne (Andrews, 1931), London (Thompson, 1937), Edinburgh in 1978, Glasgow in 1979 (Thomson, 1980 and Ramsey Market in 1981 (from Belize, J. Heath, *pers. comm.*), as well as one for Rotterdam, Holland (from Colombia, Jurriaanse, 1923) and nine from New Zealand (from Ecuador, A. Harris, *pers. comm.*).

Both the Eastbourne and Ramsey Heath specimens had travelled as pupae. The former was captured by Robert Adkin whilst in the process of drying its wings; the latter emerged from a pupa found by a Mrs. G. D. Oliver in a bunch of bananas on a stall in Ramsey Market.

Subspecific determination of *tamarindi* is difficult without both sexes. As the Ramsey Heath male originated in Belize, it can be confidently assigned to nominate *tamarindi* which has a range from Mexico to Panama. A colour slide and photograph of the Edinburgh female was kindly supplied by Dr. Mark Shaw of the Royal Scottish Museum. It has a fairly large apical ocellus on the hindwing underside, and in this respect it is matched most closely by specimens from the Magdalena Valley, Colombia, or Atlantic Panama. *O. tamarindi* from these localities are currently regarded as a form of nominate *tamarindi* (Bristow, in prep.). Mr. G. Thomson (*pers. comm.*) checked his Glasgow female against my photographs of type *t. tamarindi*, *t. corrosus* (from Ecuador) and *t. mesomerista* (from western Venezuela). It matches none of these and I suspect that, like the Edinburgh specimen, it is the Colombian form of nominate *tamarindi*. Neither Scottish specimen could have come from Surinam (Thomson, 1980:202); apart from a dubious Trinidad specimen in the BMNH, *tamarindi* does not occur farther east than western Venezuela. The London specimen is no longer to be found in the Passmore Edwards Museum (C. Plant, *pers. comm.*), and I do not know the whereabouts of Adkin's *tamarindi*. Much of Adkin's collection passed to the British Museum

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(Natural History), but a search by Mr. R. I. Vane-Wright failed to find this specimen.

I would be interested to hear through these columns of any other occurrences of *tamarindi* (or any other brassolinid) in Britain. Howarth (1973) has no record of *tamarindi* either in, or brought to, the British Museum (Natural History) (as part of a generic revision of *Opsiphanes* I have been through all the neotropical collections in the BMNH and there are no British specimens). Dr. I. D. Wallace of Merseyside County Museum, and Mr. J. Deeming of the National Museum of Wales, searched their respective drawers of imported 'exotics', but no *Opsiphanes* were found. Finally Messrs. J. Heath and P. R. Syemour kindly searched the Ministry of Agriculture, Fisheries and Food records of 'intercepts' up to 1984, again to no avail.

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THE EARLY INSTARS OF THE LARVA OF EUPROCTIS SIMILIS (FUESSLY) (LEP.: LYMANTRIIDAE). — On the 4th of September, 1985, when in Tunstall Forest, east Suffolk, I found on an alder leaf a number of larvae newly hatched from a batch of ova covered with hairs from the anal tuft of the female. These eventually turned out to be a *E. similis*, but neither I nor my companions recognised them. In the first two instars the ground colour was dark purplish brown, the dorsal stripe deep orange-yellow and the other markings paler yellow; white was entirely absent. The second instar was similar. Only in the third instar did the familiar scarlet, black and white pattern appear.

Was this an aberrant batch of larvae or is this the normal, but apparently unrecorded, coloration of the young larva? — A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

EXPANSION OF RANGE OF THE SPECKLED WOOD BUTTERFLY, *PARARGE AEGERIA* L., IN NORTH-EAST SCOTLAND

By D. A. BARBOUR*

Introduction

Thomson (1980) in an exhaustive treatment of the past and present distribution of Scottish butterflies, showed that several of our species have not only maintained but increased their ranges in recent years. That this is in strong contrast to the unhappy situation in many parts of England is confirmed by the account of Heath *et al.* (1984). One of the notable 'success stories' among northern butterflies has been that of the speckled wood *Pararge aegeria*. A few years ago restricted to a small area on the Atlantic coast of west Scotland, it has expanded both northwards and southwards, into areas from which it had previously been absent since the late nineteenth or early twentieth century (Downes 1948). Still more remarkably it has recently invaded a large area of coastal north-east Scotland where there is no evidence that it ever occurred before. This paper chronicles the history of that invasion and attempts to answer some of the ecological questions that it poses.

The pattern of expansion

1. Early years (Fig. 1). The first record of the butterfly was that of Davidson (1956) who caught a single tattered female at Dochgarroch, about 3 miles south-west of Inverness, on 14.viii.55. This individual was nearly 60 miles from the then known distribution area of *aegeria* on the west coast, and Davidson suggested that it might have been a vagrant from there, transported by strong south-west winds.

No further record is extant until Mr. B. Morrison observed *aegeria* in conifer woodland at Dalcross 8 miles east of Inverness on 6.vii.61. On this occasion 2 butterflies were seen, clearly not vagrants but part of an established population.

These two records constitute the only evidence we have of the eastern population in those early years. Taken in conjunction (and in the context of an area then poorly recorded for Lepidoptera) they seem to indicate a population occupying a quite compact area (perhaps 100 square miles) within a few miles radius of the town of Inverness.

2. 1969-72 (Fig. 2). Hulme (1969b) reported finding several of the butterflies at a spot near Munloch on the Black Isle (in fact

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a broad peninsula at the inner end of the Moray Firth) on 27.vii.69. Mr. D. C. Hulme, an experienced and active lepidopterist resident in the area since 1963, had not previously seen the species anywhere in east Inverness-shire or Easter Ross. I am indebted to him for details of his further sightings which followed in the next 3 years. In 1970 the Munlochy colony was again flourishing. In 1971 the species appeared further north in the Black Isle at Rosemarkie, and in a new site east of Inverness at Cawdor. In 1971 Dr. R. Richter also saw the first *aegeria* in the western end of Culbin Forest, an extensive area of mature pine forest on coastal sand dunes east of Nairn. Next year (1972) the butterflies were reported in several parts of Culbin Forest, right to its eastern end on the shore of Findhorn Bay (BRC). In 1972 Mr. D. C. Hulme also found new localities at Cromarty (the northern point of the Black Isle) and several miles inland to the south-west at Glen Affric.

In the space of about 4 years the population appeared to have achieved a major expansion from its original base: taking Inverness as the point of origin it had now travelled some 27 miles ENE to Culbin Forest: 17 miles NNE to Cromarty: 27 miles WSW to Glen Affric. The total distributional area now occupied was of the order of 400 square miles.

3. 1973-78 (Fig. 3). In this six-year period there were significant further advances northwards, southwards and eastwards from the area occupied in 1972. The movement was constrained by the topography of the area into definite corridors of advance, as the butterfly seems effectively restricted to land below about 250m. One corridor lay along the coastal plain of Morayshire: one across the Tain peninsula of Easter Ross: and another inland to the Great Glen along the shores of Loch Ness.

The colonization of Culbin Forest was followed by progress inland to Darnaway Forest in 1975 (Dr. R. Richter) and Vale of Pluscarden in 1977. Along the coast *aegeria* appeared in Roseisle Forest (1976) and Oakenhead at the west end of Lossie Forest (1978). The rapid spread across the 'Laich' or plain of Moray was undoubtedly favoured by the high proportion of this area occupied by mature Scots pine forest (see below).

South of Inverness the butterfly's progress was followed by Mr. D. B. McGinn who found it at Loch Ashie in 1978 and at the Scottish Wildlife Trust's Farigaig Nature Reserve in 1977. Westwards there was a limited amount of penetration into the Ross-shire Glens: Mr. D. C. Hulme saw 3 in the Contin/Strathpeffer area in 1975.

In 1978 Mr. C. Headlam saw the first *aegeria* in his garden at Fearn near Tain. Further north still the butterfly appeared in woodland on the north side of Struie Hill (BRC) showing that it had

then gained access to the sheltered, well-wooded district of the inner Dornoch Firth.

Allowing for some inevitable gaps in recording, it can be calculated that the distributional area occupied to 1978 inclusive was around 750 square miles. The maximum distance travelled from the supposed origin point at Inverness was 40 miles (Oakenhead).

4. 1979-84 (Fig. 4). These 6 years saw further rapid expansion in the eastward direction, less to the south and west where the more unfavourable habitats of the high glens and mountains impeded progress.

From its 'bridgehead' at Oakenhead the butterfly spread eastwards through Lossie Forest to the area around the mouth of the River Spey. The first record east of the Spey was near Fochabers on 17.viii.80 (Dr. R. Richter). From here it progressed rapidly to colonize the large area of conifer woodland in Speymouth Forest (1981). At the same time it was striking inland around Elgin and I found it in pinewoods at Longmorn and Birnie for the first time in 1981. Mr. S. North found it in alder woodland at Rothes on the Spey in 1982, the furthest inland it had so far been seen in this eastern 'limb' of the distribution.

1983 saw the first records in Banffshire, near Mulben and at Bauds Wood near Portknockie. After a seeming deceleration during 1981-82, the coastal advance continued with renewed speed and in 1984 I found it in woodland just outside Cullen and at two different sites near Portsoy. These Portsoy records make the total distance travelled from *aegeria*'s point of origin at Inverness to be 62 miles. In 1984 the butterfly was also consolidating its inward spread up the Spey: I found it in 3 different sites around Rothes and Dr. Richter saw it a further 9 miles upstream at Boat o' Brig.

In the western part of the range, there was some consolidation but little in the way of further spread. New records in this period included mid-Loch Ness 1979 (BRC), Strathconon 1980 (Mr. G. Thomson), and Glen Strathfarrar N.N.R. 1982 (Mr. H. Brown). No further movement to the north was reported: this may simply reflect lack of recorder coverage, but it may be significant that the northernmost record at Struie Hill (1978) is close to the latitude of *aegeria*'s northern limit on the west coast too.

The further substantial increase in range in the period 1979-84 has brought the total distributional area of the butterfly in north-east Scotland to around 1,000 square miles. Further rapid expansion may be anticipated and it is very likely that 1985 or '86 will see the spread of the butterfly both northwards into Sutherland and eastwards into Aberdeenshire.

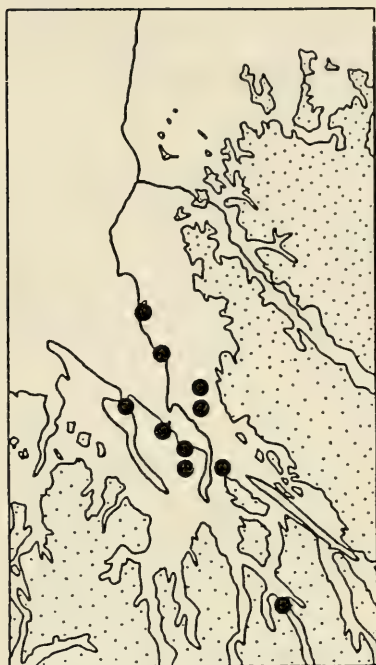


Fig. 2 up to 1972

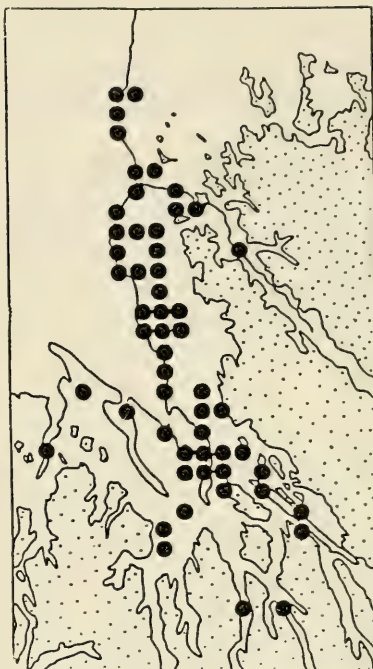


Fig. 4 up to 1984

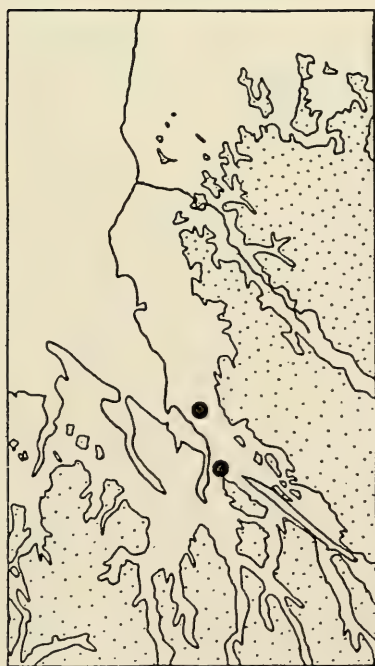


Fig. 1 up to 1966

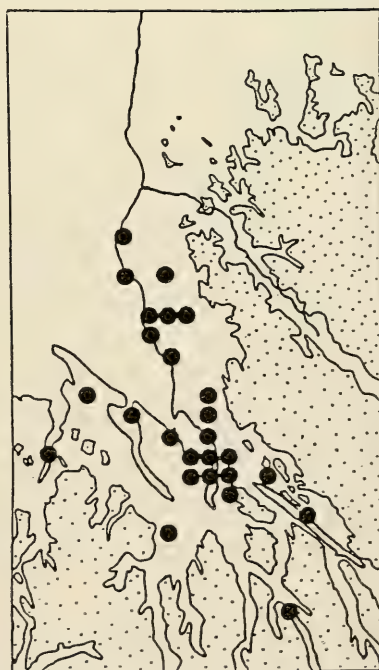


Fig. 3 up to 1978

Figures 1 to 4 : Distribution records of the speckled wood plotted cumulatively over 4 successive periods. The records are plotted on 5 x 5 km squares. Land areas over 250 m are shaded.

Discussion

The above outline of events over a period of approximately 30 years (1954-84) raises a number of ecological questions as to underlying reasons and mechanisms:—

- 1) How was the population in north-east Scotland initiated?
- 2) Why was there such a long time between the first record (1955) and the start of the period of rapid expansion?
- 3) What has driven the rapid and progressive spread, at a seemingly fairly steady rate of 3-3½ miles per year, from 1969 onwards?

Founding of the population

The appearance of the present-day distribution map of *P. aegeria* (Heath *et al.* 1984) shows that the north-eastern distribution is almost continuous with the range of the butterfly on the west coast of Scotland, the minimum distance between them being about 22 miles in the area of the Great Glen. From this it seems natural to suppose that this north-east population arose by spread from the west coast, through the narrow glens of the northern highlands, to reach the area of the inner Moray Firth some time in the early nineteen-fifties.

However, the detailed evidence that we have suggests that this was not the case. First, the two mutually-supporting early records (1955, 1961) were only 10 miles apart, close to the town of Inverness and at the very centre of the population's subsequent expansion (Figs. 1-4). This in itself suggests that the population originated there, either by accidental or perhaps human introduction some time prior to 1955. Secondly, the negative evidence: the effective restriction of the butterfly to ground under 250m means that there are only two narrow corridors through which it could have spread from the west, one up the Great Glen and one further north through Glen Carron and Strath Bran. There are no records at all for the latter area, while in the Great Glen itself there are no records prior to that at Farigaig (1977). Again, the detailed account by Howard (1978) of the macrolepidoptera of Glengarry omits any mention of *aegeria* there, indicating a real gap in the species' distribution.

The balance of evidence seems strongly in favour of a single point of origin, close to Inverness, nearly 60 miles from the west-coast range of *aegeria* at that time. Although Thomson (1980) provisionally assigned the new population to the west-coast race *oblita*, it cannot be certain whether the first introduction involved stock of western Scottish origin or perhaps from a more distant source. It may be relevant to recall that Hulme (1969a) found a

single specimen of *Celastrina argiolus* in the Black Isle in 1966, a species whose British distribution is otherwise confined to England and Ireland.

'Latent period' between 1955 and 1969

There is a strong contrast between the apparent slowness of population spread in these early years and the subsequent rapid advance illustrated in Figs. 1-4. In quantitative terms it seems that in the 15 years 1954-69 the butterfly must have spread by less than 1 mile per year on average: in the 15 years 1969-84 it achieved a fairly steady rate of just over 3 miles per year.

Reasons for this slow start might lie in the genetic structure of the population. The initial very small population (perhaps even arising from a single fertilized female) would be expected to have a greatly impoverished gene-pool, and one which was perhaps quite atypical of whatever parent population it had arisen from. This is the so-called 'founder principle' (Ford 1971 pp. 42-45) which has important implications for the evolution of small isolated populations. An iso-enzyme study, along the lines of that of Handford (1973) for *Maniola jurtina* might throw much light on this question, and also the question discussed above as to the geographical origin of the founding population. Again, a very small founding population (particularly if deriving from a single female founder) would be expected to suffer from inbreeding depression. The adverse effect of deleterious recessive genes which become exposed in such a population can decrease viability for a number of generations.

However there is a much simpler explanation which can be advanced for the apparent slowness of spread in the early years. This is just that a very small population spreading from a single nucleus takes much longer to advance a given distance than a large population multiplying at the same rate. For example, suppose that a founder population occupied an area of only 0.01 square miles and doubled in numbers (and so in area) each year. After 15 years the area occupied would be 328 square miles but the distance moved from the point of origin would be only 10.2 miles (assuming a circular dispersal). Further doubling would result in an ever-increasing rate of (linear) spread through time: however this is unrealistic in view of the limited powers of dispersal of the 'excess' population. Given that only the peripheral part of an expanding population is likely to be capable of colonizing new territory, the rate of advance is expected to approach a limiting value, proportional partly to the rate of population increase and partly to the distance of movement of colonizing individuals. This is what seems to have happened in the case of *P. aegeria*'s eastward spread since 1969.

Reasons for the rapid spread 1969-84

To some extent this question has just been answered by supposing a rapid rate of population increase (perhaps twofold) and a limited power of dispersal of colonizing individuals (perhaps 3-4 miles). It seems the butterfly produces more than one generation per year, although the exact sequence of broods is given conflicting interpretations by different authorities (Heath *et al.* 1984). The usual pattern in northeast Scotland is for a small spring brood in May-June, a large main brood in July-August and a very small (sometimes lacking) autumn brood in late September-October. It will be appreciated that even partial double-broodedness can greatly enhance the population's rate of increase and spread.

The reason for the rapid increase itself we can only guess at. It is clear that *aegeria* has been invading a vacant ecological niche in this part of Scotland: no other butterfly is adapted for life in the dense shade of mature woodland which it favours. It seems to have undergone something of a habitat shift at the same time. Thomson (1980) referring chiefly to the west coast Scottish population, gave its habitat as 'deciduous woodland'. Two of the first three records from the north-east were also in deciduous woodland: Dochgarroch 1955, in oakwood and Munlochy 1969, in beech. However, of 18 sites where I myself found the butterfly during 1976-84 no fewer than 14 were exclusively mature conifer woodland, usually of Scots pine. Responses to a request for information which I placed in local newspapers confirmed this habitat preference. (In most of *aegeria*'s Scottish west coast range the predominant conifer woodland is spruce not pine. Spruce plantations are generally so dense as to be very deficient in ground flora, so lacking the abundant supply of grasses such as *Dactylis glomeratus* and *Agropyron repens* on which *aegeria* feeds.) The butterfly has successfully colonized mature pine woodland of a similar character in the Breckland district of East Anglia (Heath *et al.* 1984). Elsewhere its present-day distribution anywhere on the east coast of Britain is extremely sparse. Lees (1962) considered that *aegeria* was restricted climatically to areas having relatively high temperatures in winter and high night temperatures in summer. It may be that a minor evolutionary shift in the population of the Moray Firth area of Scotland has enabled it to escape this climatic restriction, and so to take advantage of the exceptional concentration of mature pine woodland which characterizes this area.

Summary

The distribution of the Speckled Wood in north-east Scotland has been expanding steadily for about 30 years since its first appearance near Inverness. Rate of spread was slow in the early years

but later increased to over 3 miles per year in favourable habitat. The butterfly seems to have exploited a previously vacant niche in the extensive mature pinewoods of the area.

Acknowledgements

I should like particularly to thank Mr. P. T. Harding of the Biological Records Centre (Institute of Terrestrial Ecology, Monks Wood) for making available to me the complete data-base listing for *P. aegeria* in north-east Scotland. These records are quoted above with the attribution BRC or with the name of the original recorder if known to me. Records without any attribution are my own observations. I am grateful to the following people who responded to my appeals for information in the 'Northern Scot' and Ross-shire Journal': Mr. S. J. Aspinall, Mr. D. Caldicott, Mr. D. C. Hulme, Mrs. D. C. Jack, Mr. A. Joyce, Dr. R. Richter, Mr. G. Sutherland, Mrs. J. White, and Dr. M. Young. Other information was kindly supplied by Mr. H. Brown, Mr. J. E. Green, Mr. C. Headlam, Mr. R. Collier, Mr. D. B. McGinn, Mr. B. Morrison, Mr. S. North, Mr. S. Moran, Mr. E. C. Pelham-Clinton, Dr. M. Shaw, and Dr. A. Sommerville.

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BUTTERFLIES OF THE MONTPELLIER REGION OF SOUTHERN FRANCE

By R. D. J. TILLEY*

This paper lists the butterflies seen to the North of the city of Montpellier in Southern France during the month of July. The region covered lies mostly within the Département of Hérault, but the adjoining Départements of Gard, Aveyron and Lozère were also briefly visited. This part of France is of interest because of the wide range of terrain that is easily accessible and for the fact that, apart from the coastal strip, the land is not heavily populated. This means that considerable areas of natural land are still to be found.

Montpellier lies some 10km. from the Mediterranean sea. Inland from the city the countryside is dry in summer, well suited to the growth of vines, which are found widely in the area. The soil is calcareous, and the natural vegetation is scrub land known as "la garrigue". Typical plants consist of many fragrant herbs, such as thyme and lavender, among small oak and juniper trees. The land elevation varies from sea-level to about 300m. As representative of the region we report here on the butterflies found in the neighbourhood of Pic St. Loup, a well known landmark to the North of the city in typical garrigue.

Further inland and to the Northwest high limestone plateaus occur, known as "causses". These are 700-1100m. elevation and have a harsh climate, being cold in winter and hot in summer. The land is largely grazed grassland and includes a wide variety of limestone-loving plants. The region chosen as typical of this type of terrain was the Causse du Larzac, at the Southern end of the Département of Aveyron.

Due North of Montpellier lie the mountains of the Cévennes. These are granitic in nature and rise to well over 1500m. One considerable peak, Mont Aigoual, at 1567m. is easily reached from Montpellier, and lies on the border between the Départements of Gard and Lozère. The middle altitudes in the Cévennes are thickly forested with chestnuts, but the upper slopes are open grasslands. In the notes below we record the butterfly species found on these upper slopes in the Aigoual massif.

The regions described above were visited in July 1981 and 1984. Lists of butterflies seen on these three types of terrain were made. The records are most complete for the Pic. St. Loup region; the Causse du Larzac and the Aigoual massif being visited on fewer occasions. No special localities were sought out and so the list of species noted is representative of those readily observed. It is certain to be incomplete and in this respect it is noted that the Hesperiidae are not included.

*1 The Paddocks, Lower Penarth, South Glamorgan, CF6 2BW.

No accounts of the butterflies of this exact region have been found in the literature, but the references contain a short list of recent reports of butterfly populations of neighbouring areas which in part overlap the area under consideration here. In particular, the Cévennes National Park has been documented recently and these records are of most interest.

Species and Notes

Satyridae

Melanargia galathea lachesis Hubner: widely distributed in the Pic St. Loup area at low altitudes. On the wing from the end of the first week in July.

Melanargia galathea galathea L: widely distributed at high altitudes, 700m. or more, on the plateau du Larzac and the Aigoual massif. On the wing during mid- to end July.

Note: the distributions of these two forms is marked. All those found at high altitude were of the typical *galathea* form while those in the low altitude "garrigue" were of the *lachesis* form. No intermediate populations were found.

Hipparchia fagi Scop: widely distributed from Mont Aigoual to Montpellier, from the middle of July onwards.

Hipparchia semele L: widely distributed from Mont Aigoual to Montpellier during July.

Neohipparchia statilinus Hufn: only found in one locality near Pic St. Loup at the very end of July. Essentially an August butterfly.

Pseudotergumia fidia L: rather local in the Pic St. Loup area, from 20th. July on.

Chazara briseis L: widely distributed in the Pic St. Loup area; also found in one locality on the Causse du Larzac, from mid-July on.

Satyrus actaea Esper: found in three localities in the Pic St. Loup area in the latter half of July.

Minois dryas Hubner: males only found near Pic St. Loup, at the very end of July.

Brintesia circe D. & S.: widely distributed to the North of Montpellier throughout July.

Arethusana arethusa D. & S.: found in three locations near Pic St. Loup at the end of July. Essentially an August butterfly.

Erebia epiphron Knoch: found in the Aigoual massif at the end of July.

Erebia meolans de Prunner: found in the Aigoual massif at the end of July.

Maniola jurtina L: widely distributed in all localities visited during July.

Hyponphele lycaon Kuhn: found only in one locality near Pic. St. Loup; could be confused with *M. jurtina* on the wing.

Aphantopus hyperantus L: seen in only one locality on the Plateau du Larzac, 30th. July.

Pyronia tithonus L: seen on the plateau du Larzac, mid- to end July. Seems to be replaced at lower altitudes by the following two species.

Pyronia bathseba F: widely distributed in the Pic St. Loup area at the beginning of July. This species is always on the wing before the following one.

Pyronia cecilia Vallantin: widely distributed to the North of Montpellier throughout July; seems to follow on from the previous species, but there is a little overlap..

Coenonympha pamphilus L: widely distributed in the Pic St. Loup area from mid-July on; Mont Aigoual at the end of July. This species appears later than the following one.

Coenonympha dorus Esper: widely distributed in the Pic St. Loup area from the beginning of July, preceding the previous species by two weeks or more at the start of the emergence.

Coenonympha arcania L: seen on the Aigoual massif and the Causse du Larzac in the latter half of July. Seems to favour higher altitudes compared to the two previous species.

Pararge aegeria aegeria L: found in one location near Pic St. Loup and one location at Mont Aigoual, at the end of July.

Lassiomata megera L: common but never abundant near Pic St. Loup during the whole of the month.

Nymphalidae

Limenitis reducta Staudinger: widely distributed in the Pic St. Loup area in the latter part of July; also found in one locality on the Plateau du Larzac.

Nymphalis antiopa L: seen only in the Aigoual massif at the very end of July.

Inachis io L: found only in the Aigoual massif and on the Plateau du Larzac. This may be due to the fact that the food plant, Nettles, were not found in the low altitude regions visited.

Cynthia cardui L: noted only twice, once near Pic St. Loup on 13th. July and once in the Aigoual massif at the end of the month.

Argynnis paphia L: found as only two isolated individuals in the Montpellier region, but common in a number of localities on the Plateau du Larzac from the middle of the month.

Mesoacidalia aglaja L: one only seen near Pic St. Loup, 22nd. July.

Fabriciana adippe adippe D. & S.: two very worn examples seen near Pic St. Loup.

Fabriciana niobe L: one specimen noted on the Plateau du Larzac and two near Pic St. Loup in the middle of the month.

Issoria lathonia L: one seen on the Plateau du Larzac and one in the Aigoual massif, both towards the end of the month.

Brenthis daphne D. & S.: found on the Plateau du Larzac and the Aigoual massif in the latter part of the month.

Brenthis ino Rott.: noted on the Plateau du Larzac towards the end of July.

Clossiana selene D. & S.: one example seen in the Aigoual massif, 24th July.

Clossiana titania Esper: one only seen in the Aigoual massif at the very end of the month.

Melitaea cinxia L: widely distributed in the Pic St. Loup area, emergence starting towards the end of the month.

Melitaea phoebe D. & S.: found sparingly in the Pic St. Loup region and on the Plateau du Larzac.

Melitaea didyma Esper: widely distributed; found in all three localities, but never in large concentrations.

Melitaea diamina Lang: found once in the Aigoual massif, 24th. July.

Mellicta athalia Rott: noted on the Aigoual massif in the latter part of the month.

Mellicta parthenoides Keferstein: found on the Plateau du Larzac and on the Aigoual massif in the second half of July.

Libytheidae

Libythea celtis Laicharting: this very elusive butterfly was seen only twice in the Pic St. Loup region.

Lycaenidae

Quercusia quercus L: widely distributed in the Pic St. Loup area during the whole of July; also on the Plateau du Larzac in the latter half of the month.

Nordmannia acaciae F: found only on the Plateau du Larzac in mid-July.

Nordmannia ilicis Esper: found with the last species on the Plateau du Larzac.

Nordmannia esculi Hubner: very common in the Pic St. Loup area during the whole of July; also noted on the Aigoual massif at the end of the month.

Strymonidia spini D. & S.: found on the Plateau du Larzac in mid-July.

Strymonidia w-album D. & S.: found on the Plateau du Larzac together with the last species, mid-July.

Lycaena phlaeas L: widely distributed in all regions visited throughout the month.

Heodes virgaureae L: freshly emerged males seen on the Aigoual massif at the end of July; no females noted.

Heodes alciphron Rott: a few specimens found on the Aigoual massif at the end of July; this species clearly precedes the former in this locality.

Lampides boeticus L: found at only one locality on the Plateau du Larzac, at the end of the month.

Celastrina argiolus L: found in the Pic St. Loup area and on the Plateau du Larzac in mid-July, but not in large numbers.

Pseudophilotes baton baton Bergstrasser: occurs in the Pic St. Loup region from mid- to end July; not found at higher altitudes.

Plebejus argus L: seen in the Aigoual massif and on the Plateau du Larzac towards the end of July; not seen at lower altitudes.

Lycaeides idas L: Found only on the Aigoual massif at the end of July.

Aricia agestis agestis D. & S.: widely distributed in the Pic St. Loup area during July.

Agrodiaetus thersites Cantener: widely distributed in the Pic St. Loup area; found in one location on the Plateau du Larzac, mid- to end- July.

Agrodiaetus escheri Hubner: found on the Plateau du Larzac, mid- to end July.

Plebicula dorylas D. & S.: seen at only one locality on the Plateau du Larzac, 18th. July.

Lysandra coridon Poda: very common indeed in the Pic St. Loup region during the latter half of the month.

Meleageria daphnis D. & S.: seen in only one locality near Pic St. Loup in the middle of July.

Polyommatus icarus Rott: common in both the Pic St. Loup area and on the Plateau du Larzac, mid- to end July.

Papilionidae

Papilio machaon L: seen only as isolated individuals in the Pic St. Loup area towards the end of the month.

Iphiclides podalirius L: widely distributed in the Pic St. Loup area and frequently seen throughout the whole of July.

Zerinthia rumina L: only one female seen at the beginning of July near Pic St. Loup; very late for this species.

Parnassius apollo L: seen on the Aigoual massif at the very end of July.

Pieridae

Pieris brassicae L: seen in the Pic St. Loup region at the end of July.

Aporia crataegi L: found sparingly on the Aigoual massif, end of July.

Artogeia rapae L: widely distributed from the middle of the month.

Artogeia mannii Mayer: found in only one locality in the Pic St. Loup region, together with the previous species.

Artogeia napi L: widely distributed from the Pic St. Loup area to Mont Aigoual.

Pontia daplidice L: found only on a few occasions in the Pic St. Loup region.

Colias crocea Geoffroy: widely distributed, from Montpellier to Mont Aigoual, but never in large numbers.

Colias australis Verity: frequently seen as isolated individuals, in the Pic St. Loup region from mid-July onwards. All specimens examined in detail appeared to be *C. australis* but there is the possibility that *C. hyale* L. was also present.

Gonepteryx rhamni L: seen near to Montpellier at the very beginning of July; appears to precede the following species.

Gonepteryx cleopatra L: common from the Pic St. Loup area to the Aigoual region, including the Plateau du Laezac.

Leptidea sinapis L: widely distributed and often found in large numbers in the Pic St. Loup region; also seen on one occasion on the Plateau du Larzac.

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SYNANTHEDON CULICIFORMIS (LEPIDOPTERA : SESIIDAE) IN MID-PERTHSHIRE.—The Sesiidae appear to be poorly represented in Scotland and so every opportunity must be taken to define accurately the distribution of the few species present. Baker (1985: **MBGBI** Vol. 2) records *Synanthedon culiciformis* (Linn.) from only three Scottish vice-counties, namely Kincardineshire (VC91), South Aberdeenshire (VC92) and East Inverness-shire (VC96). To these we can now add a fourth, namely Mid-Perthshire (VC88). This addition is based on four records:—

- 1) An imago of the yellow-banded form (ab. *flavocingulata* Spuler) taken on the course of the old railway in Glen Dochart (O.S. Grid Ref. NN4527) on 15.vi.1985 by Kenn Watt.
- 2) An exuvium found protruding from a birch trunk in Meggernie Pinewood SSSI, Glen Lyon (O.S.Grid Ref. NN5545) on 16.vi.1985 by Keith Bland.
- 3) An imago of the typical form taken at Dall, Rannoch (O.S. Grid Ref. NN5956) pre-1983 and now in the Rannoch School Collection (c/o Dr. R. Paul).
- 4) An imago of the typical form seen at rest at Kinloch Rannoch (O.S.Grid Ref. NN6558) on 1.vii.1976 by Richard Lyszkowski.

We feel that this catalogue adequately confirms the continued presence of *S. culiciformis* in Mid-Perthshire. K. P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS and K. R. WATT, Natural History Museum, Zoology Department, University of Aberdeen, Aberdeen AB9 2TN.

A MODERN REVIEW OF THE DEMISE OF
HECATERA DYSODEA D. & S.:
THE SMALL RANUNCULUS

By COLIN PRATT*

(continued from page 78)

Bolting and Varieties

Cultivated lettuce bolt, that is produce flower and seed, if the plants are subjected to adverse conditions of temperature or rainfall — usually too high and too little respectively — or are left for a long period when mature enough for human consumption. Should one of these meteorological conditions prevail during summer many more plants could be at a suitable stage of development for *dysodea* larvae. A study of the relevant weather records (Nicholas & Glasspoole, 1932; Meteorological Office, 1915; Manley, 1974) reveals that no such trend occurred.

Bolting lettuce would have been of more frequent occurrence a century ago compared to nowadays; widespread irrigation now partially offsets a long dry spell of weather, strains have been bred to extend the period before bolting takes place, and no doubt as the industry became more sophisticated and intensive due to foreign competition far fewer plants were allowed to come to flowering maturity. As it is bad commercial practise, more lettuce plants are allowed to run to seed in amateur gardens and allotments than in market gardens. Two thirds of the insect records come from areas of dense human population, as mapped in the 1930's (Philips, 1935) and, although there would have been more entomologists to note the species, this confirms that the small ranunculus fed primarily on *L. sativa*. Away from towns the moth was mostly concentrated in Essex and Cambridgeshire, both seed growing counties.

There have been numerous physically different varieties available since before the middle of the 19th century, at that time "very nearly twenty being enumerated as objects worthy of garden culture" (Rhind, 1860) and both Cos and Cabbage lettuce were mentioned; a few decades earlier thirty different varieties were reported (Phillips, 1822). More than a century later Watts (1954) listed 130 currently named British varieties, these being synonymous with a total of only 36 distinct physical varieties. At this time the varieties then available were stated to take between five and 28 days to bolt — the average being about two and a half weeks — and this was a slight improvement over the named varieties of half a century earlier; but this is probably misleading, as no doubt different strains within a variety were developed over the years for slow bolting characteris-

*5 View Road, Peacehaven, Newhaven, Sussex.

tics. Clearly, a sudden and nationwide change from a variety which quick bolted to a considerably slower bolting one could have had a large detrimental effect on the moth. But, although public acceptance of new lettuce varieties can be swift, advances in breeding slow bolting strains were slow and concentration was probably on disease resistance.

For *dysodea* at Coggeshall, the cause of its decline was vexatiously reported as being that "the particular species of lettuce it mostly favoured is little cultivated there now and the moth is proportionately scarce" (Harwood, 1903) (the word "species" should have read "type" or "variety"). This is the only statement published at the time of the moths disappearance that attributed a definite cause for the decline — but it failed to name the type concerned. Important though this assertion is, it seems most unlikely that a lepidopterous larva which would feed on several different *species* of *Lactuca*, and even *Crepis*, would refuse a different *variety* of its favourite foodplant, to the point of extinction. Furthermore, I can find no lettuce variety in fashion over the last half of the 19th century that was not still being cultivated after the First World War. However, there was at one time much more Cos lettuce grown around the cities and it is probable that Harwood was referring to this decline in favour.

How the acreage of lettuce altered, taking into account the conflicting forces of foreign imports and the increasing number of local market-gardens, is unclear — but there is no doubt that large amounts of lettuce have been grown in the eastern counties from about the middle of the 19th century onwards. Equally certainly, the vegetable industry suffered continual encroachment by expanding towns and cities (London's population multiplied six times during the 19th century) which necessitated regular and locally complete removal of the gardens; this would have cost *dysodea* dear, as the moving would probably have been carried out during winter, for economic reasons, and those pupae which survived quick building would eventually yield moths that emerged to a local environment containing little or no suitable foodplant.

Climate

One possible indirect effect of climate on *dysodea* has already been mentioned and discounted; but there were a number of Lepidoptera, some widespread, which dramatically declined, eventually to extinction, over the last half of the 19th century — *A. crataegi*, *C. semiargus*, *C. arenaria*, *E. ilicifolia*, *A. pabulatricula*, *I. limbaria*, and *G. furcifera* (Bretherton, 1951). This suggests that a pervading detrimental influence such as climate was responsible; this has been positively linked to the decline of the black-veined white (Pratt, 1983) and to the increase of the white admiral (Pollard, 1979).



Figure 2. Frequency and distribution of *Hecatera dysodea* 1825 – 1900. After Heath (1979) with additions and corrections.

The small ranunculus moth was largely restricted to regions of relatively hot dry summers and its distribution is very similar to that published of annual rainfall below 30 inches (Meteorological Office, 1952). One of our most distinguished entomologists wrote that as regards Lepidoptera “in which a species always present is periodically common or scarce — much has been written, excessive *rain* being usually assigned as the cause of diminution in numbers, sunshine as the cause of increase. Without doubt these causes act to a very large extent” (Barrett, 1882). The period 1877 to 1883 inclusive was one of sequential wet summers (above average, June/July/August) but the following decades until well after the century’s turn were of a drier regime (with some notable exceptions); there had been no comparable consecutive wet periods since those around 1830 and 1775 (Nicholas & Glasspoole, 1932). This six year sequence coincides well with the insects decline outside of its relatively dry eastern strongholds, where it was always less than frequent. Furthermore, there is some evidence that the moth suffered unusually badly during individual rainy summers. Although not unusual, from 1840 to 1915 there were 15 summer seasons during which rainfall exceeded 125% of average; of these, 12 coincided with times when no *dysodea* were reported or with the final year in a recorded cycle — there is also a lesser converse bias for dry seasons. These adverse conditions did not prevent the majority of species occurring commonly during some of these years (Beirne, 1947 A).

There was also a considerable increase in the amount of (wet) westerly winds over the first half of this century starting in 1896,

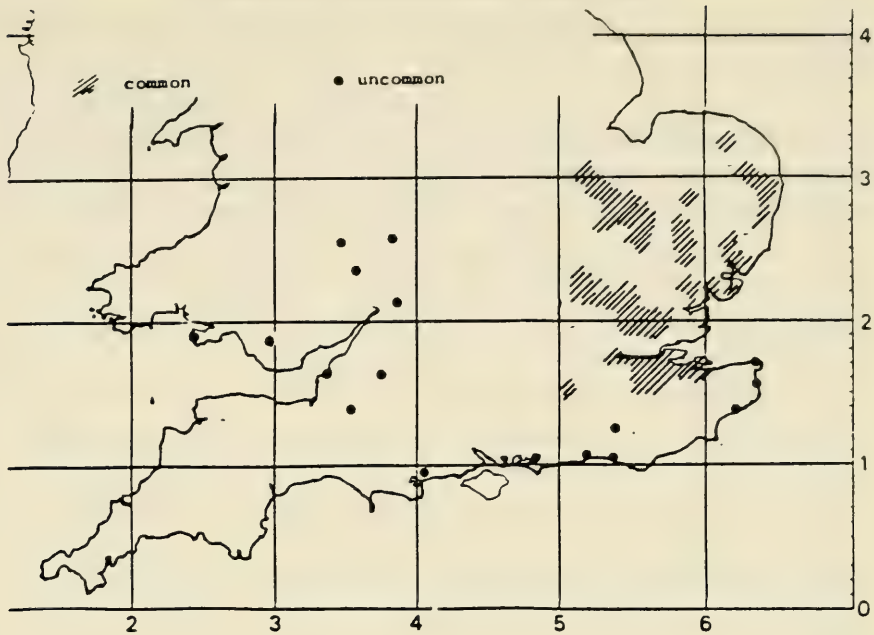


Figure 3. Diagrammatic quantitative distribution of commercially grown eating lettuce in 1958. *After Coppock (1964).*

dramatically increasing after 1902, and peaking in 1923 (Lamb, 1965) ; the coincidence is precise for the epilogue of *dysodea* but a study of the individual seasons records reveals no intimate relationship. Therefore, whilst there are some inconclusive indications that wet summers were of disadvantage to *dysodea*, fatally so in the south and west, there is less to suggest that they were a more serious factor in its eventual extinction in the drier east.

There was another climatic quirk at the end of the 19th century; from 1893 to 1939 there were 38 winters, many sequential, with above average temperatures (Manley, 1974) — the most pronounced period being 1910 to 1926 inclusive. This trend, of gradually increasing winter temperatures, whilst irregular at first became “very rapid after 1900” and the mean rise in these temperatures amounted to five degrees F., or more, in western and central Europe (Brooks, 1926). This temperature increase also coincides precisely with the main decline of the species in question. However, I have been unable to more intimately correlate this trend with the moth — although it would certainly have favoured avian predators — and as there was no coincidental decline of the insect elsewhere in Europe, where winter temperatures also rose, this mitigates against this climatic change being connected with this extinction.

Avian Predation

The increase in small birds has been mentioned in connection with the demise of *dysodea* (Bretherton, 1951). “As birds are amongst the most important of the natural enemies of the Lepi-

doptera their increase must have had important results" (Beirne, 1947).

With *Pieris* spp., the main predators on eggs, at least in Wiltshire, are the house sparrow and garden warbler; of larvae, the first mentioned, the tit family, and the song thrush (Baker, 1970). Sometimes larvae of *M. brassicae* L. are also cleared by birds (Anonymous, 1953) and cabbages would have often been grown in close proximity to lettuce. However, there is no evidence that *dysodea* fared better after the years when severe frosts caused heavy insectivorous bird mortality — but sparrows were much less affected by this weather (Gurney & Russell, 1885). The increase in sparrows took place over much of the 19th century with some concern being expressed, with a price on their heads, during the 1880's (Omerod, 1889). The increase followed that of human population and wheat production and both were often heavy in the areas favoured by the small ranunculus. Nevertheless, although avian predation on a gregarious larva such as *A. crataegi* was of crucial significance in its fight for survival, that on dispersed larvae would have been much less — especially when it "was much protected by its close resemblance to the flower-stems on which it rests by day" (Barrett, 1897).

The Wild Bird Protection Act around 1882, the zenith of the increase in sparrows at the same time, and the soon to arrive rise in winter temperatures (there were no severe winters from 1896 to 1916 inclusive) which would have been advantageous to other insectivorous birds, would all have increased avian predation over that period — but there is no evidence that they turned their attentions to the small ranunculus. Whilst no doubt many a *dysodea* larva filled a bird crop, there is no synchronous or other evidence that avian predators were a primary reason for this insects demise.

(to be concluded)

Notes and Observations

AN APPARENT PRONOUNCED SECOND GENERATION OF *ECTROPIS CREPUSCULARIA* (D. & S.) IN ESSEX IN 1984—Before 1983 there was no evidence to suggest that *Ectropis crepuscularia* occurred on Danbury Ridge in east-central Essex, save that the late Mr. H. C. Huggins found one at rest on Woodham Walter Common in late May, c. 1965.

E. bistortata (Goeze), on the other hand, is common. The first brood occurs from late March to early May; the second flies during July with a few persisting up to mid-August; and in some years there is a small third generation in October.

In this district the latter species has exhibited scarcely any variation in colour or markings: indeed, in the 18 years I have recorded here, during which period I must have examined many

hundreds, I have noted only one significant departure from the typical grey-brown colouration, and that was a specimen with a whitish ground colour on 18th July 1968.

On 12th August 1983 a large whitish, sparsely marked *Ectropis* appeared well over a week after the last (typical) *bistortata* had occurred. The specimen was shown to Mr. E. C. Pelham-Clinton who considered it to be a typical *crepuscularia*.

On 2nd August 1984, after second brood *bistortata* had been on the wing for a good three weeks, a fresh wave of *Ectropis* occurred, and of a total of 27 individuals noted between that date and 20th August (after which trapping ceased for some days), only a very small proportion conformed in appearance to the local *bistortata* — and, indeed, may well have been late individuals of that species. All but two of the remainder were either sparsely marked, conspicuously whitish insects (similar to the 1983 capture) or possessed a whitish or whitish-grey ground colour. Of the remaining two, one appeared to be consistent with ab. *delamerensis* B. White and the other exhibited varying shades of grey and was scarcely recognisable as an *Ectropis* species!

From the above it is difficult to resist the conclusion that a pronounced second generation of *crepuscularia* occurred on Danbury Ridge in August 1984. I appreciate that opinions differ among lepidopterists as to whether or not there is ever a second brood of *crepuscularia*, but it is certainly very odd that a pronounced flight of *Ectropis*, the vast majority of which were quite different in appearance to the local *bistortata*, should have developed in early August when the second brood of *bistortata* is normally dying out.

Mr. A. J. Dewick tells me that at Bradwell-on-Sea, where trapping has been carried out regularly for nearly 40 years and from which *crepuscularia* has not been claimed, there is virtually no variation in the colour of *bistortata* and no melanic specimen has ever occurred.

I am indebted to Mr. Simon Wood, who is now operating a trap 200 yards from mine, for details of his August records which are included in the above total. G. A. PYMAN, "Treyarnon", The Ridge, Little Baddow, nr. Chelmsford, Essex, CM3 4RT.

SECOND GENERATION OF *ECTROPIS CREPUSCULARIA* (D. & S.) — Having seen Mr. Pyman's note, kindly sent to me in typescript, I am prompted to add my own records of some apparent second generation specimens of *Ectropis crepuscularia* (D. & S.).

My first was a male taken at light on 25th September 1959 near Skibbereen, Co. Cork, a pale specimen with the fine blackish pencilling characteristic of southern *crepuscularia* and just as large as any of the normal May generation. I was not surprised that Mr.

E. S. A. Baynes did not accept the record and until recently I had doubts about it myself.

I became convinced that second generation *crepuscularia* did occur when collecting with Dr. J. R. Langmaid on the BENHS field meeting at Harewood Forest, Hants. on 2nd August 1982, when there appeared on the sheet a few individuals each of rather worn *E. bistortata* (Goeze) and, in better condition, *E. crepuscularia*, distinguishable at a glance by their greater size and paler colouring.

Finally, an apparent second generation female *crepuscularia* came into my garden m.v. trap here on 26th July 1982 and a male on 23rd August 1985. E. C. PELHAM-CLINTON, Furzeleigh House, Lyme Road, Axminster, Devon, EX13 5SW.

MYTHIMNA LOREYI DUP. (LEP. NOCTUIDAE) IN CORNWALL. — During the autumn of 1985 I made two visits to the Lizard, from October 1st to 3rd and from October 14th to 17th. The former was made at the end of an anticyclonic spell; the nights were mild, but clear and with a full moon, breezy on the first night but with gale force winds on subsequent ones, so m.v. light was operated only on the first evening and was largely unproductive, while three nights' sugaring attracted a mere dozen moths on each of the first two evenings, and nothing on the third. However, the bait did attract four *M. loreyi*, all in good condition, one specimen of the local dark form of *Eumichtis lichenea* Hubn. and several of the characteristic well-marked, variegated form of *Aporophyla australis* Boisd.

Anticyclonic conditions prevailed during the second visit; again the nights were mild, but after the first evening a rising easterly breeze and clearing skies soon after dark seemed to inhibit flight. Sugar applied to posts on the first two evenings attracted but a solitary *A. nigra* Haw. The commonest moths at the m.v. light were *Autographa gamma* L. in vast numbers, including a specimen of the rare ab. *bipartita* Orst. in which the "y" mark is broken into a "v" and a dot, and *Phlogophora meticulosa* L. However, next commonest was *M. loreyi* with seventeen, but not in the prime condition of those seen a fortnight earlier. Other probable immigrants in addition to the three species mentioned were several *Agrotis ipsilon* Rott., three *Peridroma saucia* Hubn. and one *M. unipuncta* Haw.; other interesting species comprised a number of *A. australis*, still in good condition, and singletons of *E. lichenea*, *Dasypolia templi* Thunb. and a barely recognizable *Lygephila cracca* Fab.

Thus twenty-one *M. loreyi* were encountered, under not very favourable conditions; of the seventeen at m.v. light few entered the trap but rested amongst the grass a yard or so away, indeed a number were not observed until after the light had been extinguished, when after a while they tended to climb the grass stems pre-

paratory to flight. In view of the unfavourable collecting conditions during my visits, this score of *M. loreyi* must have been only a few representatives of a very considerable invasion of this insect to S.W. Cornwall during late September and perhaps early October, 1985. Two females taken laid rows of eggs inside grass stems split open previously by thumb nail, and in the grass sheaths; the eggs hatched in about a week.

An immigrant species seen by day was *Vanessa cardui*, one being observed at the Lizard and five at Helston, all on October 3rd. B. K. WEST, 36 Briar Road, Bexley, Kent.

HELOPHORUS GRISEUS HBST. (COL.: HYDROPHILIDAE) IN S. E. LONDON. — As this species (= *affinis* Marsh., *sensu* Sharp) is far from common and may not be credibly recorded from the metropolitan area except once as under, it is worth noting that I have in recent years found two examples (14.iv.84, 28.viii.85) — both males identified from the aedeagophore — in the pond on Blackheath from which I had already reported the still rarer *H. longitarsis* Woll. (1984, *Ent.mon.Mag.* 120:242). They were passed at the time as the extremely similar *H. minutus* F., common in the district; the separation of the two species is critical. I have lately detected a further male *griseus* from my former garden at Blackheath, from a small artificial pond where *minutus* was frequent; it has a brighter green pronotum than any of the latter, unlike those from the pond on the heath.

On the latter of the two above dates, besides the single *griseus* two further *longitarsis* were obtained: a female, and a very small male of the same size as the *griseus*. What makes this of some little interest is the fact that these two uncommon species are the only Helophori so far found to inhabit the pond — apart from an occasional *brevipalpis* Bed. which seems no more than casual there, though normally so abundant. However, the two rarer species are known to favour broadly similar conditions, and in fact were taken together in this district late last century. Thus, Sharp (1916, *Ent. mon. Mag.* 70: 168) wrote of his *H. diffinis* (= *longitarsis*): “Mr. Champion found an individual at Lee in Kent many years ago, and it was accompanied by a mimetic variety of *H. affinis*”. The two localities are barely three miles apart; Lee Pit (alas, long gone), then a favourite haunt of London collectors, used to yield many ‘good’ species. — A. A. ALLEN.

LARVA OF MOMPHA LACTEELLA (STEPHENS) ON EPILOBIUM MONTANUM IN APRIL. — On 18th. May 1985 I bred a female *Mompha lacteella* (Stephens) (confirmed by dissection) from a larva I found at Dewerstone Woods, Devon on 13th. April. It was mining the upper surface of a leaf at the tip of *Epilobium montanum*. In the mine the larva appeared brownish with white pinacula and a black head and plate. Unfortunately I did not see it when it emerged and before it spun its cocoon.

Both Meyrick (1928, *A Revised Handbook of the British Lepidoptera*) and Emmet (1979, *A Field Guide to the Smaller British Lepidoptera*) give the larva as occurring in August on *E. hirsutum*. Neither describes the larva and I do not know if it has been described in the British literature. Ford (1944-45, *Proc. S. Lond. ent. nat. Hist. Soc.* p. 82) states that repeated searches during August in leaves of *E. hirsutum* by himself and his friends failed to find any sign of the larva. I have searched for *lacteella* larvae in vain in August on *E. hirsutum* and wonder if it does occur on this in this country. If it has been found on this or any *Epilobium* species in August it would appear that it is bivoltine. R. J. HECKFORD, 67 Newnham Road, Plympton, Plymouth.

CHILODES MARITIMUS TAUSCH. (SILKY WAINSCOT) IN LATE SEPTEMBER. — This species occurs fairly commonly on the North Somerset coastal salt marshes. In 1985 it appeared as usual from mid June to early August. After a gap of approximately six weeks it reappeared in fair numbers in the second half of September, in good condition. This species is described as single brooded in all the text books, so could this be a delayed emergence, or a partial second brood? C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare.

CALOPTILIA RUFIPENNELLA (HUBNER) (LEP.: GRACILARIIDAE) IN KENT. — On the 10th of September, 1985, in the company of Dr. J. D. Bradley, Dr. J. R. Langmaid and Mr. E. C. Pelham-Clinton, I found the characteristic cone of this species at St. Margaret's Bay, east Kent. Further searching showed it to be common. Probably the colony is the result of recent immigration from the Continent, since the East Anglian population apparently does not extend further south than the extreme north-west of Essex. Furthermore, no parasite was reared, which is characteristic of a young colony.

Many of the cones were still tenanted and adults were reared in late September and early October. No second brood has been recorded for this species. Hering (*Bestimmungstabellen der Blattminen von Europa* 1: 24) gives the larval period as May-June; in *MBGBI* 2: 261 I gave it as June-early July in the south and up to a month later in Scotland. It is unlikely that a normally univoltine species would choose 1985 for a second brood. However, larvae are found in September in Belgium (J. M. Chalmers-Hunt, *pers. comm.*). It would therefore be interesting if a local microlepidopterist would keep the colony under observation and report on what takes place. — A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

RHODOMETRA SACRARIA LINN. (THE VESTAL) IN BERWICKSHIRE (V.C. 81). — On October 2, 1985 during a welcome 'Indian summer' I visited the River Whitadder between Edrom and West Blanerne (NT 8256) to look for fossil plants. Along the side of a stubble field I disturbed a small straw-coloured moth which soon settled again in the stubble. I placed my hand over it and succeeded in boxing it. It was new to me but on arriving home I identified it as the vestal with characteristic oblique brown marks across the forewings. In the same field I also saw a painted lady *Cynthia cardui* and silver Y *Autographa gamma* in flight.

On October 14 I was in a stubble field on the neighbouring farm of Broomhous Mains again near the Whitadder. Here I disturbed another vestal and captured it. Both were given to the Royal Scottish Museum. On October 17 I disturbed and caught a third specimen in rank herbage near the Whitadder above Hutton Mill bridge (NT 9254). These captures, as far as I know, are the first record for Berwickshire and seem to indicate a considerable immigration. I am now left wondering who was the imaginative lepidopterist who gave this moth its evocative English name? — ALBERT G. LONG, 33, Windsor Crescent, Berwick-upon-Tweed TD15 1NT.

ORANGE TIP IN FIFE — A female orange tip *Anthocharis cardamines* was seen feeding on scurvy grass *Cochlearia officinalis* by the Cocklemill Burn, near Ruddons Point, Fife by Dr. C. M. Smout, on 30 April 1983. There are no previous published records for this species in Fife. Orange tips have been expanding their range in the Lothians in recent years (e.g. Campbell 1985, *Ent. Rec.* 97: 106) and doubtless this stray crossed over the Firth of Forth. It will be interesting to see if Fife is eventually colonised. — P. K. KINNEAR, 11 Hillview Road, Balmullo, St. Andrews, Fife, KY16 0DE.

BRYOTROPHA SENECTELLA (ZELLER) (LEP.: GELECHIIDAE) ON FLOWERS OF LEUCANTHEMUM VULGARE. At about 7.30pm. on 30th June 1985 at Billacombe, Plymouth I found several *Bryotropa senectella* sitting on, and apparently feeding from, flowers of *Leucanthemum vulgare*. I have never before seen any *Bryotropa* species on flowers, has anyone else? — R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth, Devon.

THE PLUME MOTHS CAPPERIA BRITANNIODACTYLA (GREGSON) FROM WEST SCOTLAND — a female of this moth was disturbed from cliff-side vegetation at Port Kale, near Port Patrick on 5.vii.1985 (Grid. 15/991552 in V.C. 74). Dr. M. Hull has kindly confirmed the identification. I have not been able to trace any other Scottish records. I. D. WALLACE, County Museum, William Brown Street, Liverpool L3.

PLEA MINUTISSIMA FUESSLY (HETEROPTERA: PLEIDAE) IN WEST CUMBRIA. — On 25th May 1984, I took several specimens of this minute aquatic bug among submerged weedy vegetation in a shallow pool near to the River Ehen, north of Egremont, (NY01.11).

P. minutissima has previously been recorded from Cumbria and T. T. Macan in his key to the British Water Bugs, (1965, *Scient. pubs. Freshwat. biol. Ass.* No. 16:66) in a short note states that the bug is mainly confined to the south of England and briefly mentions the occurrence of the species in the Lake district. In an earlier edition of the above publication, (1941:33) Macan records taking a specimen in New Tarn near Windermere, (SD42.93).

I wish to thank Dr. Peter Kirby, Nature Conservancy. Peterborough for kindly confirming the identity of *Plea minutissima* for me. — R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA28 8RF.

LITHOPHANE LEAUTIERI HESPERICA BOURS. AND THERA BRITANNICA TURN. IN NORFOLK IN 1985 — I would like to report the following records from my garden trap in East Norfolk (TM 151793) during October 1985. On 25th October and again on 8th November I took single specimens of Blair's shoulder-knot, *Lithophane leautieri*, on each occasion accompanied by *Agrotis ipsilon*. On 19th October I took a small geometrid in the same trap which has been determined by Mr. J. Fenn as *Thera britannica*. I believe that these are the firstly records for these two species from VC 27. M. R. HALL, Hopefield, Norwich Road, Scole, Diss, Norfolk.

APION PALLIPES KIRBY, W. (COL.: APIONIDAE) IN WEST CUMBRIA. — while collecting weevils along the banks of the River Irt below Holmrook, (SD07.98) on 20th July, 1984, I swept three specimens of *Apion pallipes* from a few lowgrowing plants of dogs mercury by the side of Holme Bridge.

This beetle is regarded as being local in the British Isles, but according to Fowler is quite widely distributed. F. H. Day in his list of Cumberland Coleoptera, (1923 *Trans. Carlisle Nat. Hist. Soc.* 3:98) gives two localities, Edenhall, (NY56.32) and Cummersdale, (NY38.53): two specimens in Day's collection in the Tullie House, Museum, Carlisle are from Great Strickland, (NY56.22) and were collected by W. F. Davidson.

I should like to thank Mr. David Clarke, Curator of the Tullie House Museum, Carlisle for kindly allowing me to examine the specimens in the Say collection. — R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA 28 8RF.

EUPITHECIA TENUIATA HUBN. (SLENDER PUG) IN INVERNESS-SHIRE — Two females of this species were taken in the Rothamsted Insect Survey light trap at Fort Augustus, Inverness, (Site No. 49, O.S. ref. NH 366 092) during the period 23/25-viii-1985. Their identities were confirmed by examination of the genitalia. So far as I am aware this species has not previously been recorded from Inverness-shire.

Thanks are extended to Mr. N. Mackell who operates the trap at Fort Augustus and to Mr. B. Skinner for his comments on the distribution of this species. — **ADRIAN M. RILEY**, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts.

Current Literature

The World of Butterflies : an illustrated encyclopedia by **Valerio Sbordonì** and **Saverio Forestiero**. 312 pp; numerous colour illust. A4 format. Boards. Blandford Press. (1985) £20.00.

This volume, lavishly illustrated by paintings, covers all of the Lepidoptera. At first sight, the title and general presentation gives the impression of another "coffee table" book, but nothing could be further from the truth. The book attempts, with a fair measure of success, to cover many aspects of the biology and bionomics of the Lepidoptera. Chapters, all copiously illustrated, cover structure, origin and relationships of butterflies and moths; life cycle and metamorphosis; diversity and evolution; origin of species; systematics (including a survey of all families); behaviour; populations, demography and migrations; ecological relationships; strategies against predation and mimicry; ecological distribution; geographical distribution and "butterflies and man". There are also short sections on collecting, conservation and a brief bibliography.

Originally published in Italy, the text has translated very well. In content it is informative and easy to read. The illustrations are used to good effect, portraying themes from geographical variation (including, for once, material on geographical variation in European butterflies), to larval habits, courtship and interaction with predators. Very much a cut above the normal "encyclopedia of . . ." **PAUL SOKOLOFF**.

The dragonflies of Great Britain and Ireland by **C. O. Hammond**. 116 pp, 20 coloured plates, numerous maps & figs. 2nd ed. 1985. Harley Books. Paperback £9.75.

This excellent volume on British Dragonflies (first reviewed in the second edition *Ent. Rec.* 96: 40) has now been re-issued in a

sturdy paperback format, with an extended postscript commenting on the occurrence of *Hemianax ephippiger* and *Sympetrum fonscolombei* in the U.K. The quality of the plates remains high, and this cheaper version should prove of considerable value to the field worker. P. A. S.

The pleasures of entomology : portraits of insects and the people who study them. by H. E. Evans. 238 pp; Smithsonian Institution Press 1985. (Distributed in UK by Eurospan, 3 Henrietta Street, London WC2). Paperback. Price £15.95.

This book is written in a very personal style, occasionally anecdotal, and always very readable. The British reader may be unfamiliar with some of the common names of insects used, such as the "love-bug" (apparently a dipteran keen on copulation); the "Mormon cricket" (an enterprising orthopteran that devastated crops in Salt Lake City) and the "medfly" (a contraction of Mediterranean fruit-fly). There is an all-to-brief section on entomologists themselves, focussing mainly on Americans. There is an amusing anecdote concerning a visit by the late H. B. D. Kettlewell to the USA, which I will quote : ' . . . like a typical Britisher, Kettlewell went about in shorts and sneakers, despite our warnings about rattlesnakes. I remember him standing in a patch of milkweed that was teeming with tarantula hawks, [stinging wasps]. When one of the large, angle-winged insects landed on his bare leg and began walking up towards more delicate parts of his anatomy, he looked down and remarked quite casually ; "I say, is that a model or a mimic?" . . . ' On the whole, a very good read, but rather expensive for a paperback. PAUL SOKOLOFF.

The Macrolepidoptera of Gloucestershire by J. Newton and Dr. G. H. J. Meredith. 114 pp. The Cotteswold Naturalists' Field Club. 1984. £4.50.

This checklist of the butterflies and larger moths of Gloucestershire is based on the previous lists published by Donovan (1942) and Richardson (1946, 1953 and 1972). The editor has combined the comments for each species from the previous lists and added his own data for recent years. The older information can still be seen, however, as each species has a list of the original comments, each followed by the author's initial in brackets. This produces a rather bland style as there is little editorial comment and some repetition, but this is far outweighed by having, effectively, all five lists combined in one and with none of the original information lost. The order of species follows that of Bradley and Fletcher (1979), and each species bears the reference number from that list.

The balance of entries is very good. There is little space wasted on common species but up to twenty lines are allocated for the

scarcer moths, and in many cases all recent records have been given together with full details. There seems to be an unusual proof error: the sentence "Recorded from xxxx Gloucestershire' (Barrett)" is repeated at least ten times for different species. I can find no reference to sites deleted in this way or any other reason for this entry.

The editor is to be congratulated on the way he has assembled such a large amount of information for this local list. To give an example, the dotted rustic (*Rhyacia simulans*) has no fewer than twenty-eight entries, and together with comments about rearing and cycles of abundance the notes for this species occupy almost half a page.

This list is to be recommended not only for the entomological content, which is considerable, but also for the historical interest and the way in which this is presented. C. HART.

Butterflies of Europe by O. Kudrna (Ed.) Vol. 1 (1985) **Concise Bibliography of European Butterflies**. 447pp; octavo; Aula-Verlag, Wiesbaden. Price DM 248 (DM 216 for subscription). English price approx. £65.

This volume is the first of a projected eight volume series covering the European Papilionoidea (and apparently omitting the Hesperioidea). A preface and introduction (11 pages) lead to the main body of the work comprises a list of some 6000 bibliographic references arranged alphabetically according to author, and numbered for ease of cross-reference in future volumes. Each entry, whether book or paper, gives the title of the item in the home tongue, except that titles in Russian have been translated into English. A brief subject index completes the work.

Readers should note that this is a *concise* and not a *comprehensive* bibliography, and the Editor has carefully selected the key works from the estimated 50000 plus published references on European butterflies. The bibliography concentrates on the period 1901 to 1983, and thus does not duplicate the works of Horn & Schenckling (1929) and Derksen & Scheiding (1975). As a concise bibliography, the work succeeds admirably, and there is no doubt as to the usefulness of such a compilation. The reviewer would question the wisdom of launching such a series with a bibliography, as a supplement will inevitably be required by the time the series is complete. One would also suspect that many general naturalists would be deterred from purchasing such a volume at the beginning of a series, whereas they would be quite happy to do so if it were the last volume.

The major criticism of this volume is the price. For a book whose only illustration is on the dust jacket it is excessive, even when seen as part of a series. PAUL SOKOLOFF.

Insects in Camera. A Photographic Essay on Behaviour Text by **Christopher O'Toole**. Photography: **Ken Preston-Mafham** pp xiii, 154. 287 Colour illustrations, bound. £14.95 Oxford University Press.

In the last twenty or so years the great advances in the sophistication and quality of cameras, together with a growing interest amongst naturalists to record rather than collect natural history specimens, has produced some very fine results. This book is just such a collection of high quality records of insects in action. At first glance it might even be thought to be a book about insect photography, but this is not its aim. Aspiring photographers will have to guess as to how these pictures were arrived at, as the techniques and equipment involved are written off in one rather curt sentence, which describes a typical quality camera but fails to mention the flash lighting that seems to have accompanied the photographer in his travels.

The preface describes the aim of the book and its individual structure and concepts. Rather than starting with a book written and in need of illustrations, the illustrations led the text. 287 photographs are used to illustrate seven major themes in the lives of insects. The authors suggest that the book will appeal to naturalists and also undergraduates who may be contemplating entomology or animal behaviour as special topics. That being so, it is a shame that a considerable number of insect orders are omitted from the book.

An opening list describes the orders of insects used to illustrate the text, and there follow seven sections on different aspects of the insects' world, covering diversification, food and feeding, mating, egg laying, social behaviour, parasitism, and defence. The sections being well illustrated by colour photographs, each together with a commentary and interesting observations and facts. Altogether much fascinating information about native and exotic species. A bibliography headed 'Further Reading' covering the seven essays, contains details of many important reference works, and lastly, an index to species and subjects.

Throughout, very good quality and interest is maintained both in the text and illustrations. It was disappointing to note amongst the references to British Lepidoptera various mistakes in the nomenclature. *Abraxas grossulariata* was misspelt in both text and index as was *Micropterix*. *Tyria jacobaeae* was allocated a wrong genus and several text entries were not in the index. One wonders if the other orders and exotic Lepidoptera nomenclature are any more accurate.

These observations apart, it is an interesting and well presented book which will be a useful addition to the libraries of both the budding entomologist and naturalist. D. WILSON.

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AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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SOME ASPECTS OF THE NATURAL HISTORY
OF THE RUBY TIGER MOTH,
PHRAGMATOBIA FULIGINOSA L. (LEP.: ARCTIIDAE)

By B. K. WEST, B.Ed.*

Some confusion still exists concerning the natural history of this insect, despite the fact that a reasonable account had been written at the turn of the century by Barrett (1892-1900). He wrote of its bivoltinism — May and June, and late July and August; the moth's habit of running over low herbage; flying in the sunshine and its nocturnal activity; the rapid development of some larvae to produce a summer generation of moths, while others complete their growth more slowly and then hibernate, pupating without further feeding in early Spring. Subsequent textbooks are less in accord with reality, particularly with regard to voltinism and time of appearance of the moth. South (1939) and Skinner (1984) state that the insect is mainly single brooded, with a partial second generation in July and August, and August and September respectively. Newman and Leeds (1913) curiously, for L. W. Newman lived in N. W. Kent, state that the moth is single brooded, emerging in late May and June, and Heath (1979) also states that the insect is mainly univoltine, flying in May and June, but with a small generation in September, rare in *borealis* Staud.

Fuliginosa has been attracted to my garden m.v. light at Dartford each year since 1969, except 1975, during July and August, the earliest date being July 10th in 1970 and the latest August 28th in 1972, a range of time that agrees well with that given for Kent by Chalmers-Hunt (1960-1981), and for N.E. Surrey by L. and K. Evans (1973), although Kent records include some for early September. No first brood *fuliginosa* have been seen at this m.v. light, although prior to 1960 I encountered odd specimens flying in the sunshine on Dartford Heath in late April and May.

The most interesting aspect concerning *fuliginosa* was, I believe, first described by Chalmers-Hunt (*loc. cit.*) in which he states "The moths of the second generation seem to be mainly, if not wholly, nocturnal by habit, whereas those of the spring brood are sun loving, and have not to my knowledge been observed to fly at night." Apparently confirming this observation, Goater (1974) writes "sometimes it is seen flying commonly by day, but more usually it appears at m.v. light. In my experience the summer brood is always the more abundant, but the April-May emergence is more often seen flying by day." However, there are records, though very few, of first brood *fuliginosa* being attracted to light, thus Tomlinson (*Ent. Rec.* 80:191) observed a specimen at light at Stanford-le-Hope, Essex, 17.4.1967, and de Worms (*Entom.* 68:100) states that

*38 Briar Road, Bexley, Kent.

in two nights' collecting in the Fens, 8.6.1948, a few *fuliginosa* came to light. Diurnal flight in the second brood in S.E. England is also rarely seen, but the one record that I have found is most interesting — Wheeler-Holohan (*Ent. Rec.* 91:281) writes that at Swanley, Kent, in late August 1972, he saw several *fuliginosa* at about 4.30pm with the number increasing within half an hour to some two hundred, all to have disappeared by 5.30pm.

Corley (*Ent. Gaz.* 35:76) notes that at Faringdon, Oxon., *fuliginosa* is moderately common from late July to early September, but is never seen in May and June, nor larvae in late June or July. He suggests that the moth is univoltine around Faringdon, and further suggests that there might be a mosaic of univoltine and bivoltine populations of this moth in England. I think the answer to the first question is that in Oxfordshire *fuliginosa* is bivoltine, the summer brood dominant and being seen at light, the spring brood overlooked due to its diurnal nature and the fact that the moth is not readily seen flying in the sunshine, nor does it take readily to flight. By analogy, as well as my own experience with the two broods of *fuliginosa* in Kent, I mention that I have not seen a female *Diaphora mendica* Clerck which also flies in the sunshine, since 1953, a moth most conspicuous on the wing, yet the males are common at my garden m.v. light, and have been frequent visitors to light on my excursions to Co. Clare.

In 1976 the last second brood specimen seen at the garden trap was present on July 17th; however two more specimens were attracted on September 20th of that hot summer. Doubtless, these were representatives of a small third brood which must occasionally occur here. A similar late example was observed by Crawford (*Ent. Rec.* 70 : 58) at Buxted, Sussex, 21.9.1957, a year with extraordinary high March temperatures (at Dartford the average monthly maximum for March was 58°F., the minimum 43°F), March, April and May were very dry, while June, July and August were warmer than usual, conditions suggesting an early first brood followed by an early second brood with conditions for larval development being near optimal.

In Kent it seems that *fuliginosa* is bivoltine, flying from mid-April to late May, and again in July, August and early September, this brood being the dominant one, but sometimes a small third generation may be developed in late September. The spring brood is essentially diurnal and the summer generation(s) nocturnal. Larvae appear to be frequently encountered in September and October before hibernation, and in the early Spring. However, larvae of the first brood have been found in July, these producing moths in August (Chalmers-Hunt, 1960-81).

Barrett had noted that a third generation of moths could be reared, these emerging in September, presumably in captivity and

not under natural conditions. Kept indoors without central heating or other methods of producing a high, even temperature, *fuliginosa* of Kent origin will produce successive generations throughout the Autumn. In 1984 a third brood was obtained in late September from an August female caught at Dartford, a fourth brood emerged in late October and a fifth in early December; losses were minimal and any tendency for the larvae to hibernate occurred in the last generation only, due no doubt to the lower temperatures prevailing in late Autumn. The larvae were fed on dandelion (*Taraxacum*), chickweed (*Stellaria media*) and goosegrass (*Galium aparine*). This propensity for producing successive generations is remarkable and unique among the native British Arctiidae, and probably among the native macro-lepidoptera.

To obtain an accurate picture of the voltinism and other aspects in the British Islands is exceedingly difficult, mainly due to the almost complete absence of detailed and informative local studies on the Lepidoptera. Thus there is no work corresponding to the excellent studies by Chalmers-Hunt and L. and K. Evans for Kent and N. E. Surrey respectively, except for the former's work dealing with the Isle of Man. One can therefore but quote one's own experiences and comb the pages of the entomological periodicals for information.

What of voltinism and flight period of *fuliginosa*, including *borealis*, elsewhere but S.E. England? The textbooks are reticent on the subject. I have heard that the moth is bivoltine in S.W. England, but I have only encountered the insect at light in August, and this commonly on the S. Devon coast. For northern England Leech (*Ent. Rec.* 75:37) has provided a most useful observation, of *fuliginosa* flying in the sunshine at Formby, Lancs., 22.4.1962, but for Ballavale, I.O.M. there are trap records for June 18th and August 7th, 1953, while a series of other records for the Isle of Man affirm that the insect is bivoltine on parts of that island, but information is too scant to determine its habits of flight. Duddington and Johnson (1983) state that the moth has been frequently recorded in Lincolnshire in May and June, but with no mention of flight habit; a record is given for Boston, 3.8.1968, a specimen at light — presumably an example of the second brood, although the authors do not mention the summer generation, but instead state that it is found in small numbers in the Autumn some years, yet give no evidence of this; unfortunately much of the contents of this work appear to be a complex blend of fact and fantasy, and autumn *fuliginosa* must come within the latter category until evidence is forthcoming. In N. England and the Isle of Man therefore it seems that the species is double brooded to some extent, but one might speculate that this might not be so at higher altitudes.

Despite numerous entomological forays into Scotland and a considerable volume of literature describing the results, *fuliginosa* has rarely received mention, except in the context of finding larvae, usually in April, but sometimes in September. However, the journals provide several interesting observations — Howard (*Ent. Rec.* 90:259) reports seeing two flying at 5pm at Glengarry, Inv., 16.6.1977, while de Worms (*Entom.* 93:159) notes the moth at light at Aviemore, 10.5.1959 in contrast to Luckens (*Ent. Rec.* 83:260) who observed *fuliginosa* there in 1970 flying in the afternoon sunshine. Lorimer (1983) emphasises that in the Orkney Islands the species is diurnal, never being seen at light, making this population unique in the British Isles in this respect, bearing in mind that *fuliginosa* is found in Scotland north of the Central Highlands, the Hebrides and over much of Ireland where the moth's habits of flight seem not to have been noted. During my visits to the Highlands in July, August and September, I have not seen *fuliginosa*, except as larvae, further confirming that in this region the insect is univoltine. However, I found the moth common at street lights at Moffat, Dumfriesshire, 1.8.1972, suggesting that it is bivoltine in southern Scotland. Despite the absence of a summer brood in the Highlands, a July emergence was readily obtained from eggs laid by a female I found at Carrbridge, Inv., in early June 1970; the larvae were reared indoors in Kent and all the moths resembled the parent *borealis*, contrary to the expectation suggested by B. Harper in Kettlewell (1973). In Ireland *fuliginosa* is bivoltine in the South-West, specimens in the National Collection bear witness that the species flies there in May and August; for the remainder of Ireland the position seems obscure.

It is well known that *fuliginosa* varies regionally to the extent that subspecies *borealis* Staud. prevails in Scotland, and that specimens from northern England are intermediate in appearance between those from Scotland and southern England — form *intermedia* Tutt; however, this form is also the prevailing one in Ireland, Wales and S.W. England, i.e. the melanistic trend is not determined simply by latitude, the westerly incidence perhaps being determined by humidity and lower summer temperatures. I possess specimens from Brixham and elsewhere on the south Devon coast, and all are of this form, and quite unlike any specimens I have encountered in S. E. England, where the insect is characterized by an increase in the area of pink on the hindwings and possessing a complete, often irregular, black marginal band — form *marginata* Tutt. More rarely this band is broken into spots — form *attenuata* Tutt, and the hindwings being almost completely pink. The most extreme example of this form I have taken was caught as far north as Walberswick, Suffolk. Recently, while examining specimens of *fuliginosa* in the National Collection I was surprised to come across a series of

borealis with unusually bright reddish forewings, and a most conspicuous flame coloured tornal area on the otherwise black hindwings, specimens quite distinct from normal *borealis*; these specimens were from the Orkney Islands.

So, contrary to the statements in the textbooks subsequent to Barrett, *fuliginosa* in southern England at least is bivoltine, the second brood being the dominant one. The first brood is essentially diurnal and the second brood nocturnal in this region, and there are indications that this is so elsewhere. In the Highlands of Scotland *borealis* is univoltine, it flies by day and is attracted to light at night. For much of Britain voltinism, the relative frequency of the moth in each brood and its habits of flight seem not to be known; this applies particularly to the Southern Uplands and Central Valley of Scotland, much of Ireland and the mountains of northern England.

Reliable information regarding the foodplant preferences of the larva is scarce. In 1907 South noted that it is very partial to dock, dandelion, golden rod (*Solidago*) and plantain; nearly eighty years later a textbook appears (Heath, 1979) in which the specified plants are dock, dandelion and golden rod — same plants (almost), in the same order! Curiously, Chalmers-Hunt for Kent lists heather, sorrel, *Lamium* and bramble — but only one larva in each case, *Senecio* and broom, and two instances of numerous larvae, these on garden lupin at Dartford in 1961 and *Ballota nigra* at Chilmington in 1963. In N. E. Surrey and Lincolnshire larvae have been noted on ragwort. Although both South (1907) and Heath (1979) refer to the fact that on moors the cocoon is frequently made among twigs of heather, neither suggests that the larva feeds on heather, which indeed it does. For the Orkney Islands Lorimer lists *Senecio* and *Plantago*.

A curious error in the description of the moth appeared in the textbook by Newman (1874) and is repeated in Heath (1979); I quote from the latter — “abdomen red, dorsal stripe and lateral spots black.” In fact the abdomen does not have a dorsal stripe, but a row of black spots, although in old dried up cabinet specimens there does appear to be a black stripe.

Acknowledgements

I am grateful to Mr. D. J. Carter of the British Museum (Natural History) for granting me permission to examine the National Collection of British moths and relevant literature.

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TRIFURCULA BEIRNEI PUPLESIS, 1984 (*PALLIDELLA* SENSU AUCTT.) (LEP., NEPTICULIDAE) IN SOUTH HAMPSHIRE. — Recently Mr. S. N. A. Jacobs gave me a box of unidentified Nepticulidae which included a few taken by the late W. Fassnidge. Amongst the latter was a specimen of *T. beirnei* captured at Southampton on the 20th of August 1935. This seems to be the most recent British record. The species used to be taken, sometimes plentifully, in VCs 9, 14, 20, 36, 60 and 69 at the end of the last and in the first decade of the present century, but I know of no other subsequent record. "Southampton" is probably to be interpreted as the district rather than the city itself.

The life history is unknown, but the moth frequents grassy places where dyer's greenweed (*Genista tinctoria*) is growing. It occurs in late August and early September, and after a dusk flight rests quite conspicuously on the herbage.

The British population was misidentified as belonging to *T. pallidella* Zeller, 1845, which is an eastern European species. Puplesis bestowed the current name in honour of B. P. Beirne who is the author of *The male genitalia of the British Stigmellidae* (1945).

In spite of the lack of records, the species probably still occurs in Britain, and I would like to learn of any recent observations A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 2AF.

THE CAPTURE OF *EMUS HIRTUS* (LINN.)
(COL.: STAPHYLINIDAE) IN WEST
GLOUCESTERSHIRE (VICE COUNTY 34)

By N. W. LEAR*

On the 9th June 1984 I captured a large and rather distinctive looking Staphylinid beetle at Midger Wood, Near Hawkesbury Upton, Avon (ST 795 893). It measured some 26 mm. in length and had a long golden pubescence covering its head, pronotum and its four posterior abdominal segments. Not being a coleopterist the specimen remained, unidentified with me for some time although a tentative identification was however made by consulting the plates of "*A Field Guide To The Insects of Britain and Northern Europe*". The most convincing match being that of *Emus hirtus*. Reference was then made to the relevant sections of Joy (1932) which seemed to confirm the identification. Not being satisfied with my own identification I was able to pass the specimen on Mr. D. B. Atty who kindly confirmed it.

This species is very much associated with fresh cow and horse dung but has also been found on carrion, decaying fungi, and at sap exuding from tree stumps. All of these conditions could probably be found in the area of capture, the actual site of capture being a wooded bridleway along which it was running. Both adults and larvae prey on other insects in particular dipterous larvae.

Since this is such a rare British species and this would appear to be the first capture since the 1950's, it may be of interest to describe its past distribution. Nineteenth century records are quite widespread but are confined to the southern counties. These include; New Forest (Hampshire); Parley Heath (Dorset); Beachamwell (Norfolk); Guildford and Coombe Wood (Surrey); Redruth (Cornwall); Southend (Essex); Darland Hill, Sheerness, Sittingbourne (Kent); and Devonshire. Twentieth century records are far more localised, all being from the same small areas of Kent and Essex straddling the Thames Estuary. Kentish records are for the Sheerness District (Isle of Sheppy), Gillingham, Port Victoria and the Isle of Grain. These records, intermittently cover the years from 1909 to 1939, the most recent Kentish record being for Home Farm, Isle of Grain June 1939 (Massee). In Essex the species was collected on Canvey Island in August 1949 (Weal) and at Benfleet in the 1950's (Watts). The record included in the Coleoptera of Gloucestershire was a misidentification of *Creophilus maxillosus* Linn. Most of these records have been from the April to November period.

This Avon record is therefore way out of its previously known range so the accidental occurrence of this species here cannot be

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discounted. The site is some 20 miles from Bristol and Avonmouth docks — one possibility for its origin. However, this may represent a native population although no further specimens have been encountered.

Acknowledgements

I would like to thank Mr. D. B. Atty of Cheltenham for identifying my specimen and particularly Mr. P. M. Hammond of the British Museum (Natural History) to whom I am indebted for much of the above information.

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A FEW REMARKS ON *ATHOUS SUBFUSCUS* MÜLL. (COL.: ELATERIDAE) IN SURREY. — Mr. D. A. Prance's capture of a specimen of this beetle at Leith Hill (*antea*: 90), along with the two others in Surrey he mentions, is indeed of great interest. He refers to the difficulty of accounting for the sudden appearance of a purely North Scottish species in the county, otherwise than by introduction with plants, and adduces the case of *Nudobius lentus* Grav. as a possible parallel.

There are a number of instances of the latter kind; in fact they have been occurring at irregular intervals from about the beginning of the century right up to the last year or two, the earliest clear one being that of the Cerambycid *Asemum striatum* L. It is hard to form any wholly satisfactory theory to cover all such cases, but a natural spread from north to south has never been established in any of them, and indeed the facts run counter to such a notion.

The present one, however, differs from all these in that the species has never been found on the Scottish mainland, but only on the almost treeless islands of Orkney and Shetland — the extreme north of the Britannic area. Yet on the Continent *A. subfuscus* is a widespread and common woodland insect, not specially boreal. It is thus one of the major zoogeographical problems in the British fauna. In this case natural spread to southern England may surely be ruled out at once; nor can the species well have been there from early times, yet never seen until now. There remains only immigration from abroad and chance introduction, of which the second seems the more likely. — A. A. ALLEN.

THE FERAL LARVA OF THE ROSY WAVE,
SCOPULA EMUTARIA HUBN. (LEP.:
GEOMETRIDAE)

By J. PLATTS*

Whilst searching plants of *Chenopodium* spp. for larvae of the plain pug (*Eupithecia simpliciata* Haw.) on October 7th 1984 along the flood protection bank north of Faversham, Kent, I chanced to brush a clump of sea beet (*Beta maritima*) into my beating tray. No *simpliciata* appeared, but two very obvious "wave" larvae were found, each about half an inch in length. Both larvae were given knot-grass on which they fed into late autumn, when one unfortunately disappeared. The remaining larva successfully overwintered and completed its growth on dandelion. On July 30th a male *emutaria* emerged.

Revisiting the area on September 8th 1985 I obtained another *emutaria* larva from the same spot. Although a month earlier than the previous year, this larva was considerably larger, being about three-quarters of an inch in length. Another was shaken out of sea beet on October 12th. Despite intensive searching elsewhere on this date no further larvae were found although at least a dozen other clumps were shaken carefully. Adjacent patches of sea wormwood and goosefoot yielded nothing; however these plants were close to the edge of the creek with distinct possibilities of regular flooding during winter.

Allan (*Larval foodplants*) gives a variety of foodplants for this species on the continent, including *Atriplex* — a closely allied genus to *Chenopodium* and *Beta*. The only other food sources in the immediate vicinity of the *maritima* were various grasses and an occasional *Rumex* species, quite devoid of any foliage. It was noticeable that all the clumps of sea beet were near the top of the flood bank and thus would probably avoid the highest tides. It seems evident larvae could overwinter amongst these clumps, the robust stature of the plant affording shelter in this exposed area of salt-marsh.

Both of the larvae collected in 1985 were deprived of knotgrass and left with a few sprigs of sea beet containing ripening fruits and ovary. A very small amount of dark orange frass was passed but it appeared that the larvae were not prepared to feed up as they sometimes do when reared from the egg, and consequently were kept at more or less outdoor temperatures, where feeding virtually ceased. Despite the cooler evenings some activity was noticed after dark — the larvae moving slowly round the food container. However during the day the larvae were to be found sitting on the stems of

*11 Maydowns Road, Chestfield, Whitstable, Kent.

the sea beet, occasionally one on top of the other! Although a leaf of beet was provided, I found no evidence it had been utilised and assumed the larvae were nibbling the fruiting heads or decaying debris, thus accounting for the small amount of frass passed.

THE SMALL LAPPET (*PHYLLODESMA ILICIFOLIA* (LINN)) STILL RESIDENT IN BRITAIN — Amongst the general observations on butterflies made by a friend in a telephone conversation during the latter part of July 1985, mention was made to small (c. 1.5 inch long) larvae similar to those of the oak eggar that he had come across feeding on bilberry (*Vaccinium myrtillus*) a few days previous on a visit to a locality in the South West of England. As I was to be away from home for the next few weeks and being naturally intrigued by their identity a request was made for him to collect some. This was done, 17 larvae being collected on the 3rd August 1985 and from which I eventually received on the 15th October 14 cocoons spun up in tissue paper. Unfortunately 3 larvae had died having fallen foul to a rather inquisitive cat! However, the remainder fed on *Vaccinium* provided and had all spun up during late August/September. With by now a strong suspicion as to their identity, upon receipt I decided to force a few to confirm my thoughts. Two cocoons were subsequently forced, the remainder being kept outside for a normal emergence. One cocoon produced a fine female *ilicifolia* on the 2nd November. The other upon dissection, on the 13th November revealed a dead shrivelled larva. In addition to the locality from which the larvae were collected, similar larvae were also noted at a similar locality a couple of miles distant from the first. I myself have visited both sites previous to the knowledge of this species's presence but only during June/July. However, the habitat found there is, although limited in extent quite widespread in that general area. A full report for *The Entomologist's Record* will be produced after the 1986 season once a better impression of its abundance and distribution in this entomologically underrecorded area has, hopefully been achieved. — N. W. LEAR, 178 St. John's Lane, Bedminster, Bristol BS3 5AR.

LEUCODONTA BICOLORIA D. & S. IN THE CHANNEL ISLANDS. — In relation to R. F. Haynes's paper on *L. bicoloria* (*Ent. Rec. J. Var.* 1984, 96: 1-6) I would like to record the presence of a female specimen of this moth in the Coney Collection of the City of Bristol Museum & Art Gallery labelled "Jersey vii.05". Although not classed as part of the British Isles it seems sufficiently close to our shores to warrant note. This species is not mentioned in T. N. D. Peet's list for Guernsey (1984). — N. W. LEAR, 178, St. John's Lane, Bedminster, Bristol BS3 5AR.

JOHN FRANCILLON, F.L.S.,
A FEW FACTS

By Lieut. Col. C. F. COWAN*

John Francillon is a split personality. It is high time to heal that split. Ornithologists and transatlantic entomologists say he was a London jeweller who collected and traded in natural history objects. Hagen, in his usually accurate entomological bibliography of 1862, since copied throughout the Old World and, by Musgrave and others, in the Antipodes, simply called him a London doctor. For once Hagen was wrong. He was the first to call him a doctor, which no one in his lifetime did. Within the last ten years an entomologist collaborating with a Francillon relative published a "pedigree" and said; "We know that he lived in London and practised as a physician", calling him also a doctor and, on a later page, a surgeon. Enquiry of that writer brought eventual admission that the relative (since deceased) had known nothing of John Francillon's activities; to him he was "just a name on a chart", and so the writer had simply "followed Hagen". Even that pedigree is suspect, with mud-dles over his wives and date of death.

My mild interest in the man was aroused when, in about 1967, I was studying Boissduval's publications, and those of John Abbot. In various accounts of the latter's life the name of Francillon often briefly recurred. One day, in a library, I overheard another visitor say, and noted on a card; "John Francillon, buried 28 June 1816, St. Clement Danes, age 72". That burial date has proved correct; if his stated age was also correct he would have been born between July 1743 and June 1744. Most writers opt for ?1744 at present.

My interest was further stirred in 1974 when a lepidopterist asked if I knew where Francillon had collected in Norfolk Island. I could only reply that he was a London jeweller, ?1744-1816, that his foreign material had been "collected" by trading in England, and that his only connection with Norfolk was his London address, 24 Norfolk Street in the Strand. About two years later came the unfortunate errors mentioned above which, failing correction by their author, resolved me to put matters right. However, constant delays supervened and, now housebound and unable to follow the trails on foot, I must rely on correspondence.

So far nothing is known of the first half of Francillon's life. The few facts which have surfaced are tabulated as "events" below.'

1. 1780, 18 Oct. "Francillon, John, jeweller, 43 Friday Street, enlisted H.A.C. Resigned 1780." (Goold-Walker, 1933-37: 306).

*4 Thornfield Terrace, Grange-over-Sands, Cumbria, LA11 7DR.

Notes: That address was also, from 1760-81, that of John Cripps, jeweller (Heal, 1935: 134). Friday Street then ran south from Cheapside exactly opposite Wood Street and Love Lane, the home until 1770 of Dru Drury the famous goldsmith and celebrated collector (*ibid.*: 144).

2. 1780-82. About this time John Francillon married Sarah Susannah Kilburn, of Pages Walk, Bermondsey.
3. 1784. "Cripps & Francillon, jewellers, 43 Friday St." Trade Card listed (Heal, *l.c.*: 134)
4. 1785, 14 Sep. His first recorded child baptised; Sarah Ann. Two further daughters are recorded; Elizabeth, bap. 21 Apr. 1790 and Mary, bap. 20 Sep. 1792.
5. 1786, Apr. 24 – May 13. Sale of Duchess of Portland's collections. Francillon a buyer. His active field collecting was probably now over.
6. 1790-96. "Cripps & Francillon, jewellers. 24 Norfolk St., Strand." Trade Card listed (Heal, *l.c.*: 134).
7. 1793-96. The eminent J. C. Fabricius repeatedly cited the collection of "Dom. Francillon" in his *Entomologia Systematica*, and named as a new species the small moth *Pylalis francillana*, adding; "Francillon Anglus Insectorum strenuus collector." N.B. that Fabricius certainly knew that Francillon was not a doctor, always calling him Dom.[inus], or Mr., as for Dom. Banks, Dom. Drury, &c., not as for Dr. Hunter, Dr. Fothergill, *et. al.*
8. 1795. Publication of Francillon's *Description of a rare Scarabaeus from Potosi, in South America; with [2] engraved Representations of the same, coloured from Nature*, in 4^o (203 x 273 mm), [8] pp., Pl. (2 figs). The figures show the unpinned, unset beetle, named *Scarabaeus macropus*, or "Kangaroo Beetle" (the kangaroo proper then being highly topical).
9. 1802. Correspondence with Baron C. A. Walckenaer, Paris, on Georgian insects. The Baron reopened the correspondence in 1821 with John Abbot.
10. 1805, May 23-25. Auction of Dru Drury's collection. Francillon (age 61) a buyer. William Swainson (age 16) attended. Contact doubtful.
11. 1807. Mr. John Francillon, 24 Norfolk St., elected Fellow of the Linnean Society of London.
12. 1807, Nov. 11. John Francillon, jeweller, of Norfolk St., signed his will. Executor and executrix William Kilburn of Carshalton, Surrey, and his sister Sarah Susannah, wife of John.
13. 1816, June 23. Death of John Francillon. Funeral Jun. 28, at St. Clement Danes. Aug. 14, will proved "by oath of Sarah Susannah Francillon, widow and relict, and William Kilburn."

14. 1817, May 27, 28. First auction of collections at 24 Norfolk St. Library, fossils, shells, birds, eggs.
15. 1817, Jul. 25, 26. Second auction; British insects.
16. 1818, Jun. 11-20. Final auction; foreign insects, spiders. The 1328 lots realised £725. 11s. 6d. Alexander Mcleay bought "not far short of half".

Francillon's associates are of interest. His perceptive choice of printer, young Charles Whittingham (1767 - 1840), son of a Warwickshire farmer, had moved to London in 1789 and set up as a printer, aiming for quality. Francillon's publication was one of his early products and soon, as his presses became more numerous, he moved out to Chiswick where (1810) he founded the well-known Chiswick Press (D.N.B.).

The fine plate in Francillon's work carries, in my copy, no legend, thus appearing illegal. Comparison with the British Library copy reveals that the modern binders of mine have trimmed a few mm off the extreme bottom margin, complete with the small engraved subscription "Publish'd as the Act directs by, John Francillon, No. 24, Norfolk Street in the Strand. S. Edwards del. & Sculpt."

Sydenham Teak Edwards (? 1758-1819) had recently started working for William Curtis, engraving the majority of plates for his well-known *Botanical Magazine* in the period 1788-1815 (D. N. B.; others spell his second name "Teast").

His predecessor under Curtis, for the *Flora Londinensis* (1777-87) had been William Kilburn (1745-1818), recently moved with mother and sister from Dublin to Bermondsey, "near the nursery garden of Curtis, who saw his drawings and persuaded him to assist" (Blunt, 1967: 189). Kilburn became Francillon's brother-in-law, and soon afterwards moved to Carshalton, Surrey, where he resumed his true trade by taking over a calico-printing works, and prospered (D.N.B.).

Francillon's reason for producing his little publication may have been that he contemplated emulating Dru Drury's *Illustrations of Natural History* (1770-1782), for which he was now collecting ample material. If a success, and if he enjoyed it, the lack of page numbering would have enabled further instalments to be added. Fortunately he did not add to it, thus avoiding the risk of following Drury into bankruptcy. Perhaps also the appearance of Smith & Abbot's *Lepidopterous Insects of Georgia* (1797), with Sir James Smith's elegant text, deterred him; as surely it disheartened Thomas Martyn who, in that same year, abandoned in chaos his projected and partly completed *Psyche*. Martyn, then of King Street, Covent Garden, moved to 10, Great Marlborough Street and apparently disposed of his insects to one Green of Westminster. This may have been Rupert Green (?1769 - 16 Nov. 1804), son of the print-

publisher Valentine Green, because Martyn's insects were auctioned for a Green of Westminster posthumously on 16 Jul. 1805 (D.N.B. and Chalmers-Hunt, 1976: 69, 69n).

So much for facts, so far. It is hoped eventually to discover something about the first half of John Francillon's life. Why did John Abbot call him his "great friend" when writing to Swainson shortly before 1838? Did the two Johns meet at Drury's home in Love Lane before 1770, and then collect together? Perhaps sisters Elizabeth and Charlotte Abbot collected with them. Whom did Francillon marry before 1780 - - - ?

The first event known so far of Francillon is his enlistment, age 36, in Honourable Artillery Company. His reason for doing so is a puzzle. Perhaps he had just suffered the loss of a wife and had no offspring. Perhaps he had had bad news, or none at all, from his friend John Abbot in Georgia, now beset by the War of Independence, and thought he might help. Or perhaps he had just had a minor catastrophe with his collection. Whatever it was, it resulted in a gain for us, giving an opening for research into his private life, as although no such records were kept in those days, the present H. A. C. Archivist, Mrs. Jean Tsushima, adopted him as "one of her boys", and has helped enormously with this aspect. Events 2, 4, 12 and 13 are entirely due to her enthusiastic co-operation.

One further event must be recorded. The original specimen (the holotype) of *Scarabaeus macropus* Francillon, 1795 was sold at the 1818 auction under the auctioneer's name "*Melolontha Kangaroo*" (Sale Catalogue p.6, lot 118), since when it has been lost. Enquiries to locate it in the B.M.(N.H.) and the Hope Department, Oxford, were unavailing. Enquiry of the Macleay Museum, University of Sydney produced the request for a modern specimen for comparison. The next best thing, colour enlargements from Sydenham Edward's figures, were sent, resulting in its rapid discovery. One antenna, a mid-leg, and all tarsi, are missing, but otherwise it is in its original posture, now with a pin through the metathorax laterally. No original labels survive; only a mid-19th. century one misidentifying it as "*Macropnus (sic) crassipes* Horn". It is hoped that Dr. D. S. Horning jr., Curator of Invertebrates, the Macleay Museum, Sydney, will report his find in due course.

Acknowledgements

Numerous brief enquiries to, and NIL but helpful replies from, among others, the Royal Colleges of Physicians and of Surgeons (either of whom would have known had Francillon "practised in London") were made and gratefully received, but are too numerous to detail. The breakthrough came with the 1780 H.A.C. reference

given me by the Research Assistant, Mrs. C. Hickey, of the Society of Huguenots of London.

Thereafter, the tireless and often frustrating searches of Mrs. Tsushima already mentioned, including the finding of Francillon's will, were invaluable. The diligent help of Miss Julie Harvie, of the Entomological Library, B.M.(N.H.) in finding the legalising legend to Francillon's plate, was a great relief. Finally, the able and ready co-operation of Dr. D. S. (Woody) Horning Jr. of Sydney, is gratefully acknowledged.

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COSMOPTERIX ORICHALCEA STAINTON (LEP.: MOMPHIDAE)
IN THE ISLE OF RHUM — In a box of unidentified microlepidoptera in the Royal Museum of Scotland (formerly the Royal Scottish Museum) I recently detected a specimen of *Cosmopterix orichalcea* Stainton which had been collected by Mr. Peter Wormell, at that time Chief Warden, in the Isle of Rhum National Nature Reserve (V.C. 104) on 26th June 1967. The specimen was taken in the Harris tree plot which was planted between 1960 and 1965. The trees used for this planting were all raised on Rhum except for *Pinus contorta* obtained from Aberdeen. No trees were imported from England (P. Wormell, *in lit.*). *C. orichalcea*, which feeds as a larva on various marshland grasses, could have been breeding in that tree plot, but some less exposed area on the other side of the island around Kinloch would seem more suitable ground for it.

This is the first record of this species from Scotland: Dr. M. R. Shaw of the Royal Museum of Scotland kindly confirmed this from the Scottish Insect Record Index. It is also very far from its recorded range in southern England. E. C. PELHAM-CLINTON, Furzeleigh House, Lyme Road, Axminster, Devon, EX13 5SW.

PARORNIX CARPINELLA (FREY, 1863)
A DISTINCT SPECIES FROM *P. FAGIVORA*
(FREY, 1861) (LEP., GRACILLARIIDAE)

By A. M. EMMET*

Although Frey (1863) had described *Parornix carpinella* as a distinct species feeding on hornbeam (*Carpinus betulus*), Stainton (1864) listed both hornbeam and beech (*Fagus sylvatica*) as the foodplants of *P. fagivora*. He tells us that at the time of writing he had seen only the first part of Frey's paper, but he was probably aware of the species it had covered. He would also have known that his friend and correspondent Charles Healy had recently found a *Parornix* larva feeding on hornbeam in Epping Forest, although he had not reared the adult (Emmet, 1981); Stainton expressed his belief that no adult *Parornix* had been reared in Britain from beech either. To the best of my knowledge, he never subsequently referred to *P. carpinella* as a valid species which might occur in Britain and the presence of a hornbeam-feeding *Parornix* in this country was either forgotten or overlooked by his successors. Neither Meyrick (1928) nor Kloet & Hincks (1972) mentions the name *carpinella* and the former does not give hornbeam as a foodplant of any species in the genus.

Parornix spp. are virtually indistinguishable from the facies of the adults and confusion has reigned over the number of species as is shown by the synonymy in Kloet & Hincks. Herrich-Schäffer (1855) was in fact the first writer to describe *P. carpinella* but he did so under the impression that it was the same as *P. devoniella* (Stainton). The failure to recognise the common *P. finitimella* as British until Pierce (1917) added it to our list almost by accident is well known.

When in about 1970 the late D. W. H. Ffennell reared a *Parornix* from hornbeam, the general expectation was that *P. carpinella* would be added to the British list. However, his moths were dissected at BM(NH) and deemed to be conspecific with *P. fagivora*. Subsequent publications in this country (Emmet, [1979]; 1985) followed this synonymy, though with guarded reservations.

After the publication of MBGBI Vol. 2, the Swedish entomologist Ingvar Svensson (*in litt.*) expressed surprise at this interpretation. He enclosed figures of the female genitalia of *P. fagivora* and *P. carpinella* showing clearly marked differences, but added that he had not been able to study the male genitalia through lack of material. Knowing that Mr. E. C. Pelham-Clinton had a female *Parornix* reared from hornbeam and already dissected, I sent him the figures and he promptly confirmed the distinction.

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Both species appear to be strangely difficult to rear in captivity and almost all the specimens labelled *P. fagivora* in BM(NH) were captured as adults; this applies, for example, to the long series in the L. T. Ford collection. When I collected larvae from a beech-wood in Kent for my description of the early stages of *P. fagivora* in MBGBI Vol. 2, no adult emerged. The species is extremely local and south Hampshire seems to be the only region in which it is at all plentiful (J. R. Langmaid, *pers. comm.*). *P. carpinella* is even more local and according to present information is reliably recorded only from Kent and Essex. There are probably fewer than ten reared specimens in Britain and these are dispersed over almost as many collections. Larvae are hard to find because they occur at extremely low density on a foodplant that is widespread and sometimes grown as a monoculture in the woods of south-eastern England. Hornbeam occurs naturally only in the south-east and *Parornix* would be unlikely to be introduced to new areas with the plantation of saplings, as happens with *Phyllonorycter*. The latter pupate in their mines and as saplings retain their leaves in winter, they would travel with the tree. *Parornix* pupate in leaf-litter and would not be so transported.

The conclusion is that there is insufficient bred British material of either species for comparative study. I cannot yet give any character by which the wing pattern of *P. carpinella* may be distinguished from that of *P. fagivora*: there may be none. In the female genitalia, *P. carpinella* has the ostium simple, the upper part of the ductus immaculate, the lower part with coarse spines and the upper part of the bursa with fine spines. In *P. fagivora* the ostium is elaborate, the upper and lower parts of the ductus have minute spines and its central part and the upper part of the bursa are immaculate. There is no information about the male genitalia so far. It is not yet possible to explain how the mistake arose at BM(NH). Possibly only the male genitalia were examined and differences may be obscure in that sex. Alternatively, the slides purporting to be *P. fagivora* may in fact have been *P. carpinella*.

The purpose of publishing a paper which contains so much incomplete information is to invite the help of microlepidopterists living in the south-east of England. The requirements are genitalia drawings of both sexes of both species made from confirmed reared material, a comparison of the early stages to see if there are any differences other than foodplant and the study of a sufficiently long series of the imagines of each species to search for a distinctive character which could be used in a dichotomous key.

P. carpinella should be placed immediately after *P. fagivora* and given the Log Book number 302a. The larva of *P. fagivora* is to be found in July, and again in September. It may be that *P. carpinella* is similarly bivoltine in this country.

I wish to thank Ingvar Svensson for supplying the information

and genitalia figures which led to the recognition of the distinction between *P. carpinella* and *P. fagivora* and to E. C. Pelham-Clinton for confirming that the former occurs in Britain.

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THAUMATOPIA PROCESSIONEA L. (OAK PROCESSIONARY MOTH) AND LYMANTRIA DISPAR L. (GYPSY MOTH) ON JERSEY, 1984 — A single male specimen of *T. processionea* was caught in the Rothamsted Insect Survey light trap which operates on the Island of Jersey on the night of 20/21-viii-1984. This is only the third British record for this species, two of which came from Rothamsted traps. (See Riley, A.M. *T. processionea* L. on Guernsey. *Ent. Rec.* 97: 110-111).

A single specimen, again a male, of *L. dispar* was caught in the same trap on 31-vii/1-viii-1984. This is the seventh Channel Island record for this species (Long, *Pers. Comm.*), two of which are from Rothamsted traps; another male was taken at our Guernsey site on 17/18-viii-1971.

Thanks are extended to Mr. G. Thomas for operating our Jersey trap and to Mr. R. Long of the Societe Jersiaise for his comments on these species. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

OBSERVATIONS ON THE LEPIDOPTERA
OF ONE SITE NEAR CAHORS, FRANCE,
FROM 23RD TO 30TH JUNE, 1984

By A. SPALDING*

On a visit to France for the last week of June, 1984, I ran an m.v. light for a few nights at our rented cottage, near Le Boulve, a tiny village about 20 Km. west of Cahors. The season was late, the weather changeable, with some rain, lots of cloud, and one very spectacular 24 hour thunderstorm. The French customs had been very suspicious about my Robinson trap, but when I agreed to take it back to England with me, they let me through. During the week I identified 99 species (excluding "micros" except the Pyralidae). All were released the night after capture.

It was marvellous to see those moths that are so uncommon in England, although there was more excitement seeing one *Mythimna albipuncta* D. & S. in Cornwall than many in France, and what a pity that the *Dysgonia algira* Linn. I saw was not the 4th record for England! It was good to see those moths that we don't get in Cornwall, e.g. *Lygephila pastinum* Treit, *Apoda limacodes* Hufn, *Dypterygia scabriuscula* Linn, *Meganola albula* D. & S., *Tyta luctuosa* D. & S., *Apamea sublustris* Esp., *Boarmia roboraria* D. & S. *Oncocera semrubella* Scop, and the less common *Aspitates gilvaria* D. & S. and *Sabra harpagula* Esp. Of course, many of these moths are to be found only in chalk and limestone districts, such as surrounded our cottage, whereas Cornwall has only one tiny outcrop of limestone, and so none of these moths occur.

Out of 99 species, 9 occur here regularly or occasionally as migrants: *Harpia milhauseri* Fabr (found once in Britain), *Dysgonia algira* Linn (found 3 times), *Catephia alchymista* D. & S. (found 15 times), *Arctornis 1-nigrum* Mull (over 100 times), *Mythimna albipuncta* D. & S., *Mythimna vitellina* Hb., *Hyles euphorbiae* Linn., *Conistra erythrocephala* D. & S. (once resident in S. E. England) and *Mythimna 1-album* Linn (probably temporarily resident in Cornwall). I should include *Emmelia trabealis* Scop, as I believe this is extinct in England. The three *Mythimna* species have been seen by me in Cornwall.

I also found 10 species that have not occurred in Britain to my knowledge. One specimen of *Gastropacha populifolia* W.V. turned up, more richly coloured than its near relation in Britain, *Gastropacha quercifolia* Linn. Although west of Cahors the climate is not noticeably continental, the warmth loving *Marumba quercus* Schiff was common and *Spatalia argentina* D. & S., another thermo-

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philic species, was also trapped. The Arctiidae were represented by *Diacrisia pupurata* Linn and the very common *Eucharia casta* Esp, which apparently was flying a month later than usual. The Zygaenidae were represented by *Zygaena fausta* Linn, a day-flying moth with black wings covered by orange spots, common on the limestone hills of southern Europe. One specimen of *Catocala conversa* Esp appeared, distinguished from *Catocala nupta* Linn by the unbroken black border round its dull yellow hindwings. Another of the Noctuidae was *Anthophila purpurina* W. V., which has small red and yellow wings. Two of the Geometridae appeared, most commonly *Rhodostrophia calabra* Pet plus a single specimen of *Lomographia cararia* Hubn.

Idaea humiliata Hufn was also present, one *Cucullia* species that I was not able to identify, plus a possible *Acronicta tridens* D. & S. that, luckily for it, escaped before I could check its genitalia. Out of 99 species, only 29 were unfamiliar to me from Cornwall. I had not expected such a high degree of similarity, as Cahors is over 400 miles south of Cornwall, 100 miles from both the Atlantic and the Mediterranean, and surrounded by limestone hills rather than the slates and granites of Cornwall.

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LYGEPHILA CRACCAE FAB. (SCARCE BLACKNECK) IN S. W. CORNWALL. — The capture of a very worn specimen of this local moth at the Lizard on October 15th, 1985, perhaps deserves comment. (*Ent. Rec.* 98:120). If the larva is indeed restricted in Britain to *Vicia sylvatica* (wood vetch) it would appear that the moth was a wanderer from the coast of N.E. Cornwall or Devon some eighty miles away, for according to *The Atlas of British Flora* (Perring and Walters, 1962), wood vetch is not found near the Lizard, or from the Continent where in France the insect is widespread and has been noted on a variety of plants. The date of capture coincided with a considerable invasion of *Plusia gamma* L., *Phlogophora meticulosa* and *Mythimna loreyi* Dup. I can find no previous reference of this species being found in this area. B. K. WEST, 36 Briar Road, Bexley, Kent.

THE BUTTERFLIES OF THE GREEK ISLAND
KARPATOS WITH NOTES ON
HIPPARCHIA CHRISTENSENI KUDRNA

By ALEX RIEMIS*

Hipparchia christenseni Kudrna, a species endemic on Karpathos, was separated from *Hipparchia semele cretica* Rebel by Kudrna (1977) on grounds of differences in the male genitalia. At the time of Kudrna's study only seven males of *christenseni* were known, with the female being undescribed. In the hope of gathering more information on this species, I stayed on Karpathos from 11th to 15th June 1984.

The Occurrence of *Hipparchia christenseni*

Kudrna gives the following information about this species:
"Female unknown.

Holotype. Male. (lfw 28mm): Greece: Insel Karpathos: Lastros Geb: 15.6.1935.

Paratype. 6 males, same date (O. Wettstein (leg)): depository: NHMW.

Distribution: *H. christenseni* is an endemic species geographically isolated on the island Karpathos situated in East Mediterranean Sea between Crete and Rhodos. It is known so far from the type locality and the habitat is unknown. Also unknown is its vertical and horizontal distribution over the island (Mt. Lastros is over 1000m high) and biology"

On available maps, I have been unable to locate Mt. Lastros — the only ground over 1000 meters is Kali Limnos, with a height of 1215 m. Along the flanks of Kali Limnos I found *christenseni* in three localities : at Othos (500 m) a few males flying and resting on stones. The habitat was dry, the only vegetation being low bushes grazed by sheep and goats; at Spoa (750 m) a single female in a similar habitat and finally at Piles (300 m) there were reasonable numbers of both sexes, flying along the tracks in the pine woods.

The butterflies preferred to rest inconspicuously on the pine trunks. Enquiries revealed that the bulk of Kali Limnos had been pine forest until the mid 1970's when large tracts were burned. It would thus seem that a forest biotope would be more suitable for this species.

Notes on the males

Not all of the genitalic differences given by Kudrna are constant. Figure 5 shows that the brachia are not heavier than in *cretica*, and are more curved. The aedeagus is obviously curved. Other features, such as the rounded tip of the valvae and the broad, heavy uncus are constant.

The external characteristics appear to be indistinguishable from other taxa in the *semele* group. Kudrna states that in the males the brown marginal area is broad, the orange markings diffused and rather dull, with the overall impression of a paler species than *cretica*. My own specimens (figs. 1, 2) are much darker than those figured by Kudrna. Before visiting Karpathos, I collected a series of *semele cretica* on Crete; the uppersides of these specimens were indistinguishable from the uppersides of *christenseni*, and identical with the *cretica* figured by Kudrna.

The most noticeable differences are seen on the underside of the hindwings, these being less contrasting than in *cretica* where the dark markings are pronounced and the white postmedian band is always very clear. The hindwings of *christenseni* give a rather grey, marbled impression, particularly when series of the two insects are compared.

Notes on the females

The female genitalia are shown in figures 6 and 7. As in most taxa of the *semele* group, the female genitalia are similar. The signum is slightly broader, but the most obvious feature is the mid dorsal process which is longer and narrower than in *semele semele*.

The upperside of the wing is similar to *cretica*. The marbled grey underside of the hindwing is constant, with only a slight trace of the white, post median band visible at the apex in most specimens. (Figs. 3, 4).

Higgins notes the presence of a sphragis in the females of *H. cretica*. This structure is also present in *christenseni*.

Views concerning the criteria of "subspecies" or "species" are divided. This distinction becomes problematic in the case of island fauna, as transitional forms are often absent. No definitive opinion is offered in this paper, but the close relationships that exist between members of this complex is obvious.



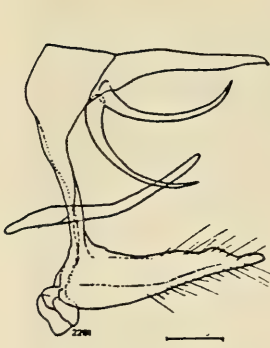


Figure 5

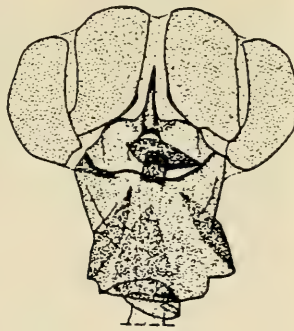


Figure 6

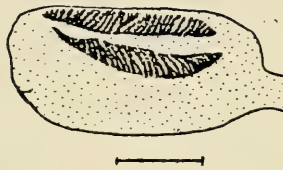


Figure 7

Figures 5-7: *Hipparchia christenseni* Kudrna. Scale bars = 1mm. 5 : male genitalia ; 6 : female genitalia ; 7 : signum. All specimens *ex* Karpathos, Piles, 300 m, 14.vi.1984 (*del.* W.O.De Prins).

Notes on other butterfly species

Apart from the notes on *christenseni* by Kudrna, the only other literature on Karpathos is a list by Rebel (1938), which notes seventeen species. Of these, *Pieris brassicae* L, *Artogeia rapae* L and *Syrichthus proto* Ochs. were not seen during my visit, but three additional species were noted: *Papilio machaon* L., *Lycaena phlaeas* L. and *Celastrina argiolus* L.

The overall impression of the butterfly fauna was one of scarcity, both in species and numbers of individuals. This may in part have been due to the dry conditions prevailing during my visit. Species noted were as follows: *Papilio machaon* L.; *Pontia daplidice* L.; *Colias croceus* Fourc.; *Gonepteryx cleopatra* L. (the specimens from Karpathos resemble those on Rhodos rather than Crete); *Lycaena phlaeas* L.; *Lampides boeticus* L.; *Celastrina argiolus* L.; *Pseudophilotes baton schiffmuelleri* Hemming; *Polyommatus icarus* Rott. (all specimens very small); *Vanessa atalanta* L.; *Cynthia cardui* L.; *Polygonia egea* Cram. ; *Maniola jurtina telmessia* Zell. — at western end of its range, and always found together with *Hipparchia christenseni* Kudrna; *Pararge aegeria* L.; *Lasiommata megera* L. and *Carcharodus alceae* Esp.

Acknowledgments

I would like to express my thanks to Mr. Paul Sokoloff for his assistance with this paper, and Mr. Willy De Prins for his drawings of the genitalia.

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TROX SCABER (COL.) IN EPPING FOREST; AND A HABITAT NOTE.
 — Mr. C. W. Plant (*Ent. Rec.* **97**: 229) may like to know of two further Essex records of this beetle. The late F. D. Buck (1955, *Ent. mon. Mag.* **91**:188) includes it in his list of Epping Forest Coleoptera: a specimen on a beech log at midnight at Loughton Camp by Box (1917, *ibid.* **53**:109), and a second record for the Forest by Sculthorpe (1951, *Proc. S. Lond. ent. nat. Hist. Soc.* 1949/50: 43). It would indeed be strange if this insect living mostly in birds' nests, especially those of owls, etc., in tree holes, had not occurred in so suitable a locality.

I would agree that *T. scaber* appears uncommon, but this, I think, is due to its generally skulking, sluggish and nocturnal habits. By day it must be sought among nest-debris or remnants, preferably where there is damp wood-mould; it may be found in such a place long after the nest is abandoned, provided that some fragments of bones, feathers etc. remain; and when so found, a number may be present. From what has just been said, it is no surprise that owl pellets are a favoured habitat. By night, when on the wing, it is attracted to light. Odd specimens are not seldom met with indoors; I have known a succession of them to be so found, to the alarm of the non-entomological occupant(s). Some of these may have flown to a light, but more often, perhaps, they have fallen down a chimney from a pigeons' nest built therein.

To answer Mr. Plant's query: I know of no evidence of migratory habits in *Trox* spp. It is of interest to note that, in contrast to *T. scaber*, the much rarer *T. sabulosus* L. appears from several records to be a day-flier, and also, not to be a nest species; it frequents old dry carrion in sandy districts. — A. A. ALLEN.

A MODERN REVIEW OF THE DEMISE OF
HECATERA DYSODEA D. & S.:
THE SMALL RANUNCULUS

By COLIN PRATT*

(concluded from page 118)

Parasites

It has been said of *dysodea* that "in common with its allies it is very liable to attack by ichneumons and they may have proved too much for it, although this must be largely surmise" (Jackson, 1946). However, the species was not listed by Bignell in his register of parasites affecting British Lepidoptera (Buckler, 1893); furthermore, the fluctuations of the moth do not correspond with those seasons when parasites were reported in unusually high or low numbers (Beirne, 1955), or with the great "wasp" years.

Pesticides

In 1982 a single crop of lettuce was reported as having been sprayed 46 times with four different chemicals (Sunday Times, 5/8/84). But I understand from a local large scale commercial lettuce grower that the spraying of chemicals on lettuce only significantly began after the Second World War — too late to affect the small ranunculus.

Pollution

Mention has already been made of vegetable growers being forced to move away from London because of air pollution and some Lepidoptera are affected by such contaminants (Beirne, 1947B). Atmospheric pollution, both smoke and sulphur dioxide is very high in the counties near London (Dobson, 1979), but the insect would have disappeared from these regions first and it is difficult to imagine the amount of pollution suffered by the fens and the south-west causing extinction.

Disease

There is no evidence that disease played a part in this extinction, although climatic factors apart, it is difficult to obtain even circumstantial indications due to the lack of data. However, the insect was not listed in a world summary of published records of species having suffered from virus diseases (Hughes, 1957) or was unusually scarce in the years following those listed as being when disease was unusually prevalent in England (Beirne, 1955).

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Summary

At the heart of this extinction lies the fact that, outside of the lettuce seed growing areas, *dysodea* was critically dependant upon the vagaries of the presence of bolted eating lettuce — not only did lettuce have to bolt for food to be available but it also had to be left for about six weeks to enable larvae to complete their growth successfully. Even at the present time, flowering lettuce can still sometimes be seen in commercial fields but they are few in number and are not allowed to stand long in mid-summer — the period of peak demand — when larvae feed; before many plants have bolted the whole field, together with the remains of the crop, is ploughed to enable the next in a quick succession of crops to be planted for maximum productivity. This was certainly the case before at least 1930 and it is likely that this was a more intensive regime precipitated by the need to compete with the then fresh flood of continental imports arriving over the last quarter of the 19th century and subsequently.

The insects strongholds were exclusively contained within those counties which grew lettuce for seed; here its disappearance was due to the dramatic drop in lettuce seed production, also due to the introduction of foreign imports, over the last quarter of the 19th century and subsequently. In those districts adjoining cities, especially London, the increasing and continual removal of the market-garden, due to the encroachment of house-building needed by the rocketing population, caused many local extinctions — again, especially over the last quarter of the 19th century and subsequently.

Wet summers probably weakened the moth, not surprisingly as it was a species at the edge of its European distribution here, sufficient enough to cause its disappearances in its southern and western outposts where it was always rare.

Of all the social, economic, commercial, and technical influences which must have affected *dysodea*. I could only find one which could have positively assisted the species — the growth of amateur gardening ; but even here, no doubt many a larva died under the heel of these perfection seeking individuals — and bolting lettuce would have been just as unwelcome.

Conclusion

I believe *Hecatera dysodea* D. & S. became extinct in Britain because of the following uniquely coincidental factors — the introduction of intensive agricultural methods in the production of eating lettuce, the sudden dramatic decline in lettuce seed production, the constant upheaval of market-gardens near towns, and the occurrence of sequentially wet summers seriously affecting the species in areas where it was already at a climatic disadvantage.

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1985

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

1985 was a somewhat disappointing year for immigrants. It started brilliantly in the first three weeks of April with one of the largest early influxes known of *Cynthia cardui* L., *Hyles livornica* Esp., and other immigrants. This is discussed below and full details of its content of the scarcer species are given, with later arrivals, in Annexe II. After that, however, in a mostly cold and wet late spring and summer, immigrations were very small. They improved considerably in late September and through October, when there were large influxes of *Rhodometra sacraria* L., *Mythimna loreyi* Dup. and some fifteen other scarcer species; but these came mainly to the south west and west coasts and only very sparingly further east. At no time was there any considerable movement from the east across the North Sea. The season effectively closed early in November with hard frosts and winter weather, despite an unusually warm December. The number of wholly immigrant species reported at 31, was above that in 1984, but there were fewer immigrants of resident species. *Proserpinus proserpina* Pall. was added to the British list, and among the rarities were two *Trigonophora flammea* Esp. and singles of *Apamea lateritia* Hugn., *Chrysodeixis chalcites* Esp., *Hypena obsitalis* Hubn., and immigrants of the resident *Photedes extrema* Hubn. and *Deltote bankiana* Fab.

Records of the April immigration include *Colias croceus* (L), several hundred *C. cardui*, *H. livornica* (over 60), *Macroglossa stellatarum* L. (3), *Agrotis ipsilon* (c25), *Mythimna unipuncta* Haw., *Spodoptera exigua* Hubn. (7), *Caradrina clavipalpis* Scop. (2), *Autographa gamma* (1), *Heliothis peltigera* D. & S. (5), *Nomophila noctuella* D. S. (c.20). About a dozen *Vanessa atalanta* L. were also seen in April, but these may have included over-wintered survivors from 1984. Single *C. cardui* had been seen on February 6 and March 14, but the first of the main immigration was reported at Egloskerry, North Cornwall on April 1, another at Mickleham, Surrey, on April 2, and then in large numbers. They were common all along the South Devon coast on April 3 and 4; many were funneling up the Fernworthy valley north to Dartmoor on April 6; and about 200 arrivals were counted on Lundy Island in the Bristol Channel on April 18. The main distribution was near the south coast from the Isles of Scilly to Dorset, with records eastwards to Kent; but it also went up the west coast to Caernarvonshire and several on Walney Island in Westmorland. Inland there were small

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numbers in Surrey and few or single in twelve counties or vice-counties through the Midlands to south east Yorkshire, where two were seen as early as April 6. The last were seen, very worn, in Sussex and North Hampshire on April 30 and one on St. Martin's, Scilly, on May 1, but the numbers in most places fell away sharply after about April 22.

In Ireland we have records from co. Mid Cork at Rochestown, April 6, Cork City, April 17, and Riverstick, at least 15 (per KGMB). The earliest *H. livornica* were recorded on the night of April 2/3: at Rushmoor, Surrey at 9 p.m. in the New Forest, south Hampshire: and two in Guernsey, Channel Islands. Others quickly followed, and by April 11 two thirds of the dated records. After a short pause, records began again, reached a peak of 10 on April 17, then fell sharply away until April 23; the last were singles in north Cornwall on April 26; a worn female found indoors in south west Ireland on April 30, and one found on June 14 at Plymouth, south Devon in a fly-trap, where it had clearly been for some time. The immigration thus fell sharply into two phases which corresponded closely with wind directions and temperatures: from March 30 to April 6 the air streams were tropical south to south westerly, from April 7 to 14 cyclonic polar south westerly to north westerly, and again anti-cyclonic tropical south west to west from April 15 to 20 (P. A. Davey, *Ent. Rec.* 97: 165-168), with corresponding movements up, down and up in night temperatures. After April 20 until well into May winds over most of Britain were constantly from the north or north west, so that further arrivals were very unlikely. As regards the origins of the immigrants, the probable flight course of one of the first arrivals on April 2/3 has been back tracked by Mr. Davey to the western Sahara at about 27°N., having probably taken some 80 hours over a distance of 1800 miles to Surrey, almost wholly over the western Atlantic. His back-track of the *H. livornica* caught on the Dorset coast at 3 a.m. on August 14 is inconclusive as to its origin; but we have since seen a valuable account (D. Hall *in lit.* and *Ent. Rec.* 98:40) which confirms the same general area as the main source for both *H. livornica* and *C. cardui*. He noted that during his stay at Marrakesch and later at Agadir in Morocco from April 17 to 18 both *H. livornica* and *C. cardui* were very common. At Marrakesch on April 5, *cardui* was in clouds on waste ground, and on April 7 more than 50 were counted in five minutes as they flew over a garden wall. It was also very common at Agadir a few days later, but *H. livornica* was predominant: It swarmed over flowers in the hotel gardens, and on April 15 many were washed up in surf on the beach and clouds were round the lamp outside his room in the evening. No accounts of *H. livornica* on mainland Europe have reached us, but the Moroccan *C. cardui* were part of a wider movement in north Africa and across the Mediterranean.

It was swarming among olive groves at Fiesole, Tuscany from April 13 onwards (Dr. J. L. Campbell), and it was seen at Basel over Easter (S. Whitebread) and elsewhere in Switzerland from the beginning of April (Dr. L. Reser).

The distribution of *H. livornica* in the British Isles was mainly western, like that of *C. cardui* but less extensive. The south coast from Cornwall to Sussex provided three quarters of the records, with 20 in Dorset; on the east there were only two in Essex; on the west one was taken at 1,000 feet inland in Cardiganshire, and two reached the boarder of North Lancashire and Westmorland on April 5 and 6. There was also one in the Isle of Man and two in West Co. Cork, Ireland. Inland there were two in Surrey and singles in six other counties, but none north of Herts. As already mentioned two of the first arrivals were in Guernsey, Channel Islands. Most were found in light traps, but several were resting by day under house windows or on walls, where one remained motionless from one day until the next morning. Several observers commented on their apparent torpidity; but one was seen as it fed in pale sunshine on daffodil blooms. The last seen were a worn female at Mevagissey, E. Cornwall, on May 4, which survived for a week in captivity but laid only one infertile egg.

Of the other immigrant species all but two of the seven *S. exigua* were noted on April 3 and 4, and the single examples of *E. ocella* and *M. unipuncta* were also in the first phase. On the other hand, of 20 *N. noctuella* all but four were seen during the second phase, as were most of the *V. atalanta*; the other species were fairly evenly divided. It is surprising that only one *A. gamma* was reported, at Hayling Island, South Hants., on April 19.

This April immigration as a whole appears to have been biologically ineffective. No larvae, pupae or imagines of *H. livornica* were reported after it, and the later records of adults of *C. cardui* and the other species appear from their dates to have been due to other immigrations. After the great immigrations of *H. livornica* in 1943 and 1949, which took place in late May and in June, there were many locally bred imagines in August. The failure to repeat this in 1985 may have been due to its cold and sunless May and June, or possibly to a lack of pairings before or after arrival.

The season after April was something of an anti-climax. There was a clearly defined immigration in the last week of May, which included, besides the *P. proserpina* already mentioned, single examples of *N. antiopa*, *Acherontia atropos*, and many *C. cardui*; indications of a small influx in the first week of July; and a considerable and varied one in its last ten days, which brought the two first *Rhodometra sacraria* of the year, many *S. exigua*, and very small numbers of six other scarcer immigrants. There was another, mainly of *Agrius convolvuli* and *Mythimna albipuncta* in the last week of

August and early September, to be followed after the middle of that month by a major invasion of *R. sacraria*. This continued also in the first half of October, and was then joined by good numbers of *Mythimna loreyi* and *M. unipuncta* and by a few of over a dozen of the scarcer species which are usually relatively plentiful in the autumn.

Of the scarce immigrant Rhopalocera, the most distinguished were two *Lampides boeticus* at Portland Bill, Dorset, on September 13, and at Highclere, South Hants, on October 21: and two *Danaus plexippus* in Cornwall, both closely watched, at Sennen Cove and at Park Head near Newquay on October 4 and 10; also, one in Co. Cork W. at Castletownberehaven on October 2. North American passerine birds were seen with the first of these; but meteorological information and Heterocera at the same date suggest the Canary Islands or Madeira as a more probable source. There were six records, all of sightings, of *N. antiopa*. The first, in Nottinghamshire on May 25, had probably overwintered from 1984. One, possibly the same insect, was seen at Holland-on-Sea, north Essex on July 8, 10 and 12; others were widely scattered later in July early August, and one was seen in east Sussex on October 25. Some of these, however, may have resulted from releases from captive breeding rather than from immigration. Of *Nymphalis polychloros* three were seen in April and May, which had probably overwintered, two in east Kent, and one on Alderney, Channel Islands; but again there is doubt about the immigrant origin of some or all of them.

Of the common immigrant butterflies, *C. cardui* arrived in considerable numbers, though without any reports of mass sightings, from late May certainly as late as October; but there were no indications of local breeding, except at Seaford, Sussex, where about two dozen larvae were found on July 23, from which imagines emerged in August. Records after April covered over 500, well above the usual annual numbers. They were most numerous from August onwards, with about 140 in October and the last at Hayling Island, south Hants, on November 13. The range, though mainly western and coastal, spread far to the north. It was seen at Cape Wrath, Sutherland, as early as May 26 and in Orkney and Caithness in early July; it was also seen in the other Scottish counties of Mid Lothian, East Lothian and Berwickshire, and on the west side over 80 were recorded in Westmorland/Furness and two in Cumberland. Two were seen in the Isle of Man in July, and we have reports, mostly of singles, in the Irish counties of Cork, Kerry, Galway, Wicklow and Dublin. It was also common on Alderney, Channel Islands from July 27 to October 8. Inland in England it was reported in Surrey, south Wilts., Middlesex, Worcestershire, Warwickshire, Northants., though in none of them in more than single figures.

V. atalanta had a sub-normal season, with apparently very little local breeding, though a single larva was found in Orkney on August 25, and an imago on September 29. Single examples seen at Ipswich on January 31 and at Oare Marshes, Kent on February 24 were presumably winter survivors and, as already noted, a few were seen during the April immigration. Considerable numbers did arrive with *C. cardui* late in May, and three were seen on Walney Island, Westmorland on May 27 and 30 and a single as far north as Carrbridge in Invernesshire on June 6, but they were generally scarce in June and it was not until mid July that they became numerous, and then only near the coast. In August the species became more general and was fairly common in Northants, and other Midland counties, and continued to be so through September when one entered a light trap in Kirkcudbrightshire on September 19. Large numbers reported in October were mainly due to late influxes. In Cornwall, 31 were counted at St. Ives between October 12 and 15, and many hundred were seen coming in off the sea at Rame Head on October 20, but we had no accounts of it in November or December. Five were seen in the Isle of Man in September and a few in Co. Cork and Co. Kerry, also in September, and in Alderney it was reported as common from July 27 to August 10.

(to be continued)

Notes and Observations

HIPPARCHIA NEOMIRIS GODART (LEP.: SATYRIDAE) AT SEA LEVEL IN CORSICA. — The Corsican grayling, *Hipparchia neomiris*, is confined to Corsica, Sardinia and Elba, and according to L. G. Higgins and N. D. Riley (*A field guide to the butterflies of Britain and Europe*, Collins, 1983) it occurs on mountains at 900-1800 metres, except on Elba where it inhabits lower elevations. Between 7 and 22 September 1985 I observed butterflies around Porto, Corsica, which is on the coast at or just above sea level. Almost all were feeding from patches of flowering mints, *Mentha aquatica* and *Mentha* (?) *suaveolens*, associated with fresh-water springs, and from clumps of *Inula viscosa*, the yellow flowers of which were conspicuous along roadsides. These were the only significant sources of nectar in an otherwise desiccated landscape. The southern grayling, *Hipparchia aristaeus*, was abundant, and among them I found two *Hipparchia neomiris*, indicating that at least occasionally this species occurs at sea level in Corsica. DENIS F. OWEN, 2 Shelford Place, Headington, Oxford.

EUPITHECIA TENUIATA HUBN. (SLENDER PUG) IN INVERNESS-SHIRE — Two females of this species were taken in the Rothamsted Insect Survey light trap at Fort Augustus, Inverness, (Site No. 49, O.S. ref. NH 366 092) during the period 23/25-viii-1985. Their identities were confirmed by examination of the genitalia. So far as I am aware this species has not previously been recorded from Inverness-shire.

Thanks are extended to Mr. N. Mackell who operates the trap at Fort Augustus and to Mr. B. Skinner for his comments on the distribution of this species. — ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts.

BLAIR'S SHOULDER-KNOT (LITHOPHANE LEAUTIERI HESPERICA BOURS) IN NORTH WORCESTERSHIRE — At 11.50 p.m. on October 14th 1985 a male specimen of this moth came to my garden m.v. trap at Blackwell near Bromsgrove (O.S. ref SO 995 724). This is the first record of this species for my district. Hopefully, the numerous *Cupressus* trees in the area will soon support a resident population of this species. The only other record of interest from my garden this year was a female specimen of the bordered straw (*Heliothis peltigera* D. & S.) taken on the night of July 1st. This is the second record of this species for my garden. The specimen was a fertile female, and although I obtained numerous larvae, I failed to produce any further adult moths! Perhaps larvae of this species should not be kept indoors, but allowed to enjoy the benefits of sunshine on growing foodplants outdoors. The larvae fed readily on the flowers, stems and leaves of garden pot marigolds (*Calendula* sp.) — M. D. BRYAN, Keeper of Natural History, Birmingham Museums and Art Gallery.

[An interesting account of the problems associated with rearing *peltigera* is given by Colin Pratt, *Ent. Rec.* 93: 137-141 — P.A.S.]

MIGRANT RECORDS FOR 1985. — There may be nights where negative collecting results are as intriguing in the records of insect movement as actual sightings. One such instance is described here.

Several trips to Dungeness, Kent, during the autumn of 1985 produced some interesting migrant moths. The first records are for 26/27th September, when in the company of Bernard Skinner, one *Heliothis peltigera* D. & S. (The bordered straw) and two *Rhodometra sacraria* Linn. (The vestal), one at light and one at rest on grasses, were noted. I returned to Dungeness on the night of 5/6th October and operated m.v. lights in the same area. At about 10pm, a specimen of *Trigonophora flammea* Esp. (The flame brocade) arrived at light. (This appears to be the first confirmed record for this species from Kent). Later, two specimens of *Euchromius ocella* (Haworth) and one *Spodoptera exigua* Hb. arrived at light.

The third trip to the same area on the night of 10th October may be of interest in view of what did not happen. About twenty moths came to light, consisting of seven species, none of a migratory nature, not even a single specimen of *Nomophila noctuella* D. & S., of which about 15 specimens were noted on the previous visit. However, on the same night, Bernard Skinner operating lights on similar terrain at Pagham Harbour, Sussex, logged 43 species of macrolepidoptera including single examples of *T. flammea* Esp., *Mythimna loreyi* Dup. (The cosmopolitan), *Trichoplusia ni* Hb. (The ni Moth), *H. peltigera* D. & S., and two examples of *S. exigua* Hb.

No doubt many uneventful collecting trips pass unrecorded, with no more than a silent curse, but when such contrasting results occur only 80 miles apart on the same night, they may indicate quite significant points of migratory progress, together with the need to refrain from a greater expletive. D. E. WILSON, Joyce House. Green Tye, Much Hadham, Herts. SG10 6JJ.

COMMA BUTTERFLY ATTEMPTING TO COPULATE WITH A SMALL TORTOISESHELL — W. J. Tennent's note on unusual sexual behaviour in butterflies (*Ent. Rec.* 96 :131-132) prompts me to record the following: On 19th August 1983 at about 1700 hrs, at Ashburnham, East Sussex, I watched a male comma (*Polygonia c-album* L.) of the form *hutchinsoni* attempting to copulate with a presumed female small tortoiseshell (*Aglais urticae* L.). The comma closely pursued the tortoiseshell in flight and when the latter alighted on a Buddleia inflorescence the comma approached very close whilst curving his abdomen forward persistently for a few seconds. The tortoiseshell then flew up, still closely followed by the comma and the same procedure was then repeated on another Buddleia inflorescence, before the comma finally peeled away during the next chase. No other comma butterflies were seen in the vicinity. R. HOBBS 15 Greenacres, Westfield, Hastings, Sussex.

TWO BEETLES APPARENTLY UNRECORDED FROM SURREY — The following two species of Coleoptera taken by me do not seem to have been recorded from the vice-county of Surrey, at least as far as the literature goes; though this does not preclude their being found here before. *Parabathyscia wollastoni* (Janson) (Leiodidae); in plenty under rotting grass cuttings on a vegetable plot 15.xi. to 3.xii.84, Kingston upon Thames (TQ1969) but not found since. *Enicmus brevicornis* (Man.) (Lathridiidae); several under bark of stacked beech logs 18/29.viii.83, Leith Hill (TQ1342). This species has been spreading lately (see Allen, A. A., 1981, *Entomologist's Rec. J. Var.*, 93: 178-179). — D. A. PRANCE, 23 Brunswick Road, Kingston Hill, Kingston upon Thames, Surrey KT2 6SB.

A FURTHER RECORD OF *CERAMIDIA VIRIDIS* DRUCE (LEP.: CTENUCHIDAE) — A deformed specimen of this species was discovered with its pupa and flimsy cocoon in a crate of Colombian bananas at St. Austell in July 1984. This was reported to me by Mrs. L. de Greeve. I am grateful to the Rev. D. J. L. Agassiz for his opinion, and the staff at the British Museum who subsequently confirmed the moth's identity. Dr. F. N. H. SMITH Turnstones, Perrancombe, Perranporth, Cornwall.

“JUST A SHORT SERIES” — Destruction of habitats has caused a steady loss of alternative accessible breeding grounds with resulting depletion of the majority of our butterfly species, and though some may still be abundant where they occur such places have been increasingly vulnerable to chainsaw, bulldozer or plough. Unless protected they are capable of becoming unrecognisable literally overnight, and there is good reason for anxiety. If such loss continues many of the more desirable species, from the collector's point of view, will ultimately be restricted to reserves where collecting is either forbidden or under very tight control. There is indeed now widespread doubt as to whether there can be any justification at all for collecting butterflies.

The subject was discussed at a meeting of the British Entomological and Natural History Society in April, 1985. A realistic appraisal of the pros and cons debated, by Mr. A. E. Stubbs of the Nature Conservancy Council, who chaired the meeting, was published in the Proceedings and Transactions of the Society in November, 1985, and I think that all collectors should read this.

As a collector I have found it impossible to explain collecting to non-collectors. They, and perhaps even more so some of my conservationist colleagues, cannot understand it at all, and I suppose collecting is something to do with the genes. Collecting so often starts in youth with the desire to catch a red admiral at the top of a buddleia bush, and no more justification than the excitement of success and the joy of possession is required. This does not last for long, and sophistication demands better reasons, such as the quest for perfection or knowledge and the ambition to fill empty spaces. In my own case it has been a mixture of these, but they have brought a growing respect and sense of responsibility which have made killing irksome. However, deep down I am a conservationist because I dread the day when butterflies and moths need to be so protected that there is no longer any choice about collecting them. This is all too possible, and I think the writing is already on the wall as far as many butterfly species are concerned. Moths have not, and may never have, the same popular appeal as butterflies, and the freedom to collect all but a very few of them without arousing much hostility still exists, but it seems to me unwise to take it for granted

that this will not change. The time has come for restraint, without which many a common species today may be a rarity tomorrow.

"Just a short series" doubtless has wide interpretation, but whatever it may mean I believe that the traditional need for a series of more or less identical specimens, even if bred, can no longer be justified. I suggest that a pair of any species is enough to kill, and a single specimen only, preferably male, of a species known to be local or rare. What will be the reaction to this suggestion I wonder? The Royal Society for Nature Conservation's British Wildlife Appeal slogan, "Tomorrow is too late", is to my mind too apt to be ignored. Dr. F. H. N. SMITH, "Turnstones", Perrancombe, Perranporth, Cornwall. TR6 OHX.

LIMNOPORUS RUFOSCUTELLATUS (HETEROPTERA: GERRIDAE)
BREEDING IN IRELAND. — A recent note by J. O'Connor (*Ent. Rec.* **98**: 34-35) reviewed the position of the gerrid *L. rufoscutellatus* in the British Isles. Only three Irish specimens had been reported prior to 1960. The scarcity of collected material and the fact that the captures (all adult) were made from March to early June, led Leston (1956) to suggest that this gerrid was a pre- or post-diapause immigrant from the Continent, which did not breed in Britain. O'Connor's discovery of no less than 15 previously unreported specimens in the Halbert and Bullock Collections in the National Museum — 13 of them being taken from the same site in Kerry in September 1938 — suggests that breeding populations can and do exist.

On 13 August 1985, on a small pond in East Cork — (Ir. grid. ref. W940735), whilst sampling for *G. odontogaster*, two late instars of this elusive gerrid were found in a thick *Typha* band that almost completely encircled the pond. The specimens, one fourth and one fifth instar, were identified using Poisson's key (1924). On the 17 September 1985, an adult was collected on the same pond.

Vepsäläinen (1973: The distribution and habitats of *Gerris* species in Finland. *Annales Zoologici Fennici* **10**: 419-444) characterises *L. rufoscutellatus* as a common but hardly ever an abundant species in Finland; in larger ponds, there being 1 to 10 *rufoscutellatus* adults to 1000 *G. odontogaster* giving a maximum density of 0.01/m. Poisson (1924: Contributions à l'étude des hemipteres aquatiques. *Bull. Biol. Fr. Belg.* **58**: 49-305) stated that it was less gregarious than other gerrids. It is found from March to September on ponds and lakes in France: the first imago appearing in the latter half of August. This correlates with the attempted moult to adulthood of the captured fifth instar on the 20 August 1985. O'Connor believes that intensive sampling would reveal breeding populations in the West of Ireland but the discovery of these specimens approximately 100 km East of the previously recorded cap-

ture sites, would suggest that the species is not confined to the West but indeed may occur over a much wider range.

It is hoped that further sampling in 1986 will reveal a sizeable breeding population of *L. rufoscutellatus* on this pond and that observation of this population will further our knowledge of the status of this species in Ireland — A. M. MURRAY, Department of Zoology, University College, Cork, Rep. of Ireland.

PHYLLONORYCTER DISTENTELLA (ZELLER, 1846) UNIVOLTINE IN BRITAIN. — On the 11th September, 1985 Mr. E. C. Pelham-Clinton, Dr. J. R. Langmaid and I collected mines of this species in Blean Woods, Kent and our observations show it to be univoltine. By that date the mines were fully formed and quite plentiful, but there were no examples from which moths of a first generation had emerged, as with the other oak-feeding *Phyllonorycter* which were then only just starting to make their second-generation mines. The *P. distentella* were kept under observation for the next few weeks, but there was no autumn emergence. Then, after exposing them for three months to the weather, JRL and I brought our mines indoors at the beginning of January, together with those of a few bivoltine species collected elsewhere. Moths from the latter began to emerge after two or three weeks but it was early March before the first *P. distentella* appeared, to be followed by a succession of others throughout the month. Univoltine species such as *P. roboris* (Zeller) and *P. cavella* (Zeller) show similar delay if an attempt is made to force them. According to Dr. M. R. Harper (pers. comm.), *P. distentella* likewise has only a single generation in Herefordshire.

P. distentella was added to the British list in 1886 by Wood (*Entomologist's mon. Mag.* 22: 262), who expresses no opinion on the number of generations. Meyrick in his *Handbook of British Lepidoptera* (1895) listed it as bivoltine, perhaps on the analogy of most other members of the genus. This error was followed in all subsequent British publications, including MBGBI, Vol. 2.

The adults appear in June and the larvae feed in July and August, becoming full-fed at the end of the latter month or in early September. It is not yet known whether pupation takes place in the autumn, or if the larva overwinters and changes in early spring, as is the behaviour of a small minority of *Phyllonorycter* species. A surprising absence of parasites from the Blean material may have been due to chance, but it is possible that *P. distentella* acquires some measure of immunity by its timing, the generations of the parasites being co-ordinated with the bivoltine regime of the commoner oak-feeding *Phyllonorycter*.

I take this opportunity to make a second factual correction to the section on *Phyllonorycter* in MBGBI, Vol. 2. On p.339 the mine of *P. strigulatella* (Zeller) is stated to occur on the upperside instead

of the underside of the leaf. This was a misprint which escaped the notice of proof-readers and its correction does not reflect a revision of data. The position of the mine is given correctly on p.248. A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

ETHMIA BIPUNCTELLA F. & E. SEXPUNCTELLA HUBN. IN SUSSEX. — My friend Mr. J. M. Chalmers-Hunt (*antea*: 164 *ad fin.*) writes, apropos of a recent Sussex capture of *E. bipunctella*, that he knows of only one previous record for the county (Peacehaven, 1952). I was under the impression that this moth was fairly well known from the shingle-beach area of the East Sussex coast about Pevensey, as already reported by me in this Journal (1955, 67: 154) on information furnished by the late H. C. Huggins. I have an example bred from one of two larvae found at the latter place in 1953 (Allen, *l.c.*).

Of *E. sexpunctella* I bred three specimens in 1969 from larvae taken off *Echium vulgare* at Castle Water, Rye Harbour. I can say nothing as to the present status of this species in Sussex, but the locality is most probably well within its range as now known, which is, I believe, very similar to that of the last. — A. A. ALLEN.

ELACHISTA UNIFASCIELLA HAW. AND BRYOTROPHA POLITELLA STT. IN HAMPSHIRE — On 14th. April 1985 I visited the Leckford Estate nature reserve on the downland slope bordering the north-eastern edge of the private golf course (VC 12), accompanied by Dr. J. R. Langmaid and Mr. E. C. Pelham-Clinton, to look for downland *Elachista* mines, and in a blade of *Dactylis* found a large *Phyllonorycter*-like blister mine which ECP-C identified as that of *Elachista unifasciella* Haw., and later he found a similar mine. I revisited the area again on 18th. April, and also on 21st. April in company with Mr. M. J. Sterling. In all 4 *E. unifasciella* emerged from mines that I kept. This species is new to Hampshire and its known distribution elsewhere in this country is very limited. Other *Elachista* scarce in Hampshire bred were *E. gleichenella* Fabr. from *Carex flacca* (JRL) and *E. luticomella* Zell. from *Dactylis* (MJS).

On 7th. July on the opposite slope Mr. P. H. Sterling netted a female *Bryotropha* which we could not immediately identify. On dissection, the genitalia appeared to agree with illustrations of *Bryotropha politella* Stt., and our thanks are due to Dr. K. Sattler who subsequently checked and confirmed this from material at the BM(NH). This too is a new record for Hampshire and I have been unable to find any other specific record for the southern counties, although in his *Revised Handbook of British Lepidoptera* (1927), Meyrick does mention Wiltshire, whose nearest point is less than 12 miles distant. COL. D. H. STERLING, "Tangmere", 2 Hampton Lane, Winchester, Hants. SO22 5LF.

Current Literature

The Moths and Butterflies of Great Britain and Ireland, Volume 2. Cossidae — Heliodinidae. Editors: **John Heath** and **A. Maitland Emmet**. Associate editors: **D. S. Fletcher**, **E. C. Pelham-Clinton**, **B. Skinner** and **W. G. Tremewan**. Artists: **Brian Hargreaves**, **Timothy Freed** and **Brenda Jarman**. 460pp., 123 black and white illustrations and text figs., 223 distribution maps, 16 plates (including 14 in colour). Harley Books, Martins, Great Horkesley, Colchester, Essex, 1985. £45.

This is the fourth volume to be issued, of this projected series of 11, intended to cover the whole of the British Isles Lepidoptera. The book begins with a detailed account by Dr. Miriam Rothschild of British aposematic Lepidoptera (pp. 9-62), in which is included a list of 209 bibliographical references, 12 figures and two coloured plates. Then comes the main part of the work or systematic section, beginning with a Key to the Families of the suborder Ditrysia (pp.64-69) adapted from Sattler (1977), followed by treatments of the various families dealt with in this volume. These are: the Cossidae, by B. Skinner (pp.69-74); Zygaenidae, by W. G. Tremewan (pp.74-123); Limacodidae, by B. Skinner (pp.124-127); Psychidae, by P. Hättenschwiler (pp.128-151); Tineidae, by E. C. Pelham-Clinton (pp.152-207); Ochsenheimeriidae and Lyonetiidae, by A. M. Emmet (pp. 208-212 and 212-239); Hieroxestidae, by E. C. Pelham-Clinton (pp. 240-243); Gracillariidae, by A. M. Emmet, I. A. Watkinson and M. R. Wilson (pp.369-388); Choreutidae and Glyphipterigidae, by E. C. Pelham-Clinton (pp.389-399 and 400-407); Douglassiidae, by D. J. L. Agassiz (pp. 408-409) and, finally Heliodinidae, by A. M. Emmet (pp.410-411). At the end of each family is a list of bibliographical references, that for the Zygaenidae running to 290 items. The text concludes with two indices: one, a general index (pp. 453-458); and the other, an index of host plants (pp. 458-460).

As is customary in this series, the systematic section is printed in double columns. Keys are provided to all species (imagines) excepting certain ones of doubtful British status. For the Psychidae, there are also keys to the cases of full-grown larvae; for the Zygaenidae: *Zygaena*, keys to larvae and cocoons; and for the Gracillariidae, keys to mines. Detailed descriptive treatment is given of the imago and early stages (when known) of most the 234 species concerned, with those of only doubtful or casual status generally receiving relatively slight coverage. As in previous volumes, so as to assist identification with species of similar appearance, the critical differences are high-lighted in some cases, with the help of an excel-

lent series of drawings of the genitalia and wing characters. For the Zygaenidae, there are also observations of particular interest on the derivation of vernacular names, on conservation and on collecting and preparation techniques; and regarding the *Zygaena*, much additional information on many aspects of all its stages.

The brief accounts of distribution are supplemented by 223 maps, in most of which distribution is shown by vice-county, but in some, notably those for the Cossidae, Zygaenidae and Limacodidae, it is by 10km. square dot distribution based on records compiled by the Biological Records Centre, Institute of Terrestrial Ecology. These dot distribution maps are only provisional (see p.63), but they are interesting as giving an overall picture of distribution, though not necessarily an accurate one.

There are 14 coloured plates including 12 of 424 paintings of imagines, in addition to a number of illustrations of Zygaenidae larvae and cocoons and Psychidae larvae, cases and cocoons. Two black and white plates contain 23 drawings, mostly of leaf mines of the Lyonetiidae, Phyllocnistidae and Gracillariidae. The quality of all these illustrations is as good as, and in some cases better than, those of previous volumes in the series. However, with the availability of the latest modern techniques in colour printing and photography, a more realistic and true result could have been achieved by the use of colour photography in place of art work.

The text of the various contributions is generally of the same high standard as before, though unfortunately with many species the distributional and historical data are still inadequate. An extraordinary omission from the list of references of the section on the Psychidae is J. W. Tutt's *A Natural History of the British Lepidoptera*, Vol. 2: Psychides, pp.102-434, which although now 86 years old is probably still the most detailed treatment of the group. For the Tineidae, *T. fulvimitrella* (p. 185) is stated as being not recorded from Ireland, yet in *Ir. Nat. J.* 20:532, I confirmed it as having been taken at Powerscourt in 1927.

In many ways, Volume 2 is perhaps the most interesting so far of the series. The Zygaenidae contribution is a masterpiece: which is hardly surprising considering the authors' specialist qualifications. But above all, this volume includes the first more or less comprehensive treatments to be published of the British Tineidae, Ochseneimeriidae, Hieroxestidae, Phyllocnistidae and Douglassiidae, and as such it will prove absolutely essential to the needs of all students of these groups. The book is contained in a serviceable hard back covered with green cloth matching the others in the series, and has the same style of printing and setting. So far as we can see, it is almost entirely free from misprints, a remarkable achievement in a work of this size and nature. — J. M. C.-H.

Threatened Swallowtail Butterflies of the World: The IUCN Red Data Book by **N. Mark Collins** and **Michael G. Morris**. Published in hardback by IUCN, Gland and Cambridge, vii + 401 pp., 9 colour plates, 24 x 17 cm. ISBN 2 88032 603 6. November 1985. Price £18.00.

The conservation of animals and their habitats has rightly become a topic for much debate. This, coupled with increasing public awareness, has created an environment which has spawned a vast number of committees, commissions and pressure groups who have in turn forced the enactment of legislation on National and International levels. Much of this legislation is, by its very nature, cumbersome, inflexible, inept and inappropriate. Tales of an individual being heavily fined for capturing an insect with a net whilst another receives a grant for destroying that insects' habitat with a mechanical digger may well be apocryphal, but illustrate the dilemma which may be posed by the interpretation of the Law. It is all too easy for well intentioned legislation to be politically coloured, with the resultant loss of credibility. Good conservation legislation needs to be based upon sound data and a rational analysis of that data. This book sets out to provide such an analysis for the swallowtail and birdwing butterflies of the world.

The volume beings, sensibly, with a chapter on how to use the book and includes a review of the Red Data Book status categories for species. Subsequent chapters include detail of the biology, distribution, classification, value to science and man, threats to survival and conservation measures for swallowtails. There is a complete family list with distribution and conservation data for over 570 species and a geographical index covering every country of the world. There is a fascinating chapter on the significance of worldwide trade in these butterflies with data on centres of trade, trends in prices and availability, farming and ranching and current legislation. 78 species are treated in detail, each being considered under the headings of description, distribution, habitat and ecology, threats, conservation measures and references. The work concludes with an index of common and scientific names, and 8 colour plates depicting 40 threatened species of swallowtail and birdwing.

A review of this length cannot do justice to the wealth of information presented in this book. The authors are to be congratulated on producing a work which is readable, informative and rational in its argument. The reviewer does not like illustrations in which the specimens are all presented in a uniform size, but this is a trivial criticism of a worthwhile book which, by modern standards, is reasonably priced. A model which should produce many mimics.
PAUL SOKOLOFF.

-
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AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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LEUCODONTA BICOLORIA SCHIFF. LEP.:
NOTODONTIDAE (THE WHITE PROMINENT) —
A POSSIBLE OCCURRENCE IN DORSET

By S. C. S. BROWN*

About 1935 I met A. Ford of Southbourne, Bournemouth, for the first time. He was a man past middle life, and was an entomological dealer in a small way. He was particularly interested in the Coleoptera, and when searching for them in winter would at the same time dig around the base of trees for the pupae of Lepidoptera.

The following is the story as told to me in confidence by Ford, and as both participants have long since passed on, it is now possible for me to relate it:

In the spring of one year he sent to a customer of his a batch of pupae collected in the Poole area. A few weeks later Ford received a letter from him to say that he had bred a specimen of *Leucodontia bicoloria*, and in view of its extreme rarity, wanted an explanation. Ford assured him that he had not at any time kept foreign livestock, and that the pupae he had supplied him had been collected only by himself. Ford asked him (I was given his name — Baron Bouck), not to carry the matter any further, as if the story became known, he thought that he (Ford) might be accused of “planting” and his reputation as a dealer would suffer.

During the years I knew Ford I used to visit him at his house and I purchased from him a cabinet and some set insects, and I always looked upon him as being a straight forward and honest man. As far as I was aware, he did not collect nor breed Lepidoptera. I do not see any valid reason why *bicoloria* should not have occurred in Dorset, or indeed may still be there. Poole and its surrounds enjoys a mild and equitable climate, protected as it is on the East by the Isle of Wight, and on the West by the Isle of Purbeck. Birch is abundant in south-east Dorset, mainly as scrub on the open heaths, but growing to large trees in the moist, sheltered hollows.

As regards to the origin and distribution of the British lepidopterous fauna, the theory that seems to be generally accepted is the one that the majority of the species at present here came in during the Post Glacial Period at the end of the third Ice Age, and while part of Britain was connected to the Continent by a land-bridge at Kent and Sussex, and across the southern part of which is now the North Sea. As the ice-cap receded forests of pine and birch took its place. It could well have been that *Leucodonta bicoloria*, attached as it is solely to birch, was one of the first immigrants, spreading steadily west and northwards, and entering Ire-

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land across the land-bridge which still existed from south-western Scotland.

This species has been recorded in Britain from Killarney in Ireland, Burnt Wood in Staffordshire in 1861, and in 1880 one near Exeter, Devon. It has not been heard from its main locality in Ireland for some years, and is most probably extinct as a British species.

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NEURAPHES TALPARUM LOKAY (COL.: SCYDMAENIDAE) RECAPTURED IN S. E. LONDON. — On 16th October last I sieved an example of this uncommon species (= *N. rubicundus* auct. Brit. nec Schaum, see Allen, 1969, *Ent. Rec.* 81:240) out of damp debris at the bottom of a farmyard straw-stack at Shooters Hill near here. This appears to add another type of habitat to those already recorded (rotten wood, moss and dead leaves, and moles' nests, the latter evidently the primary one), but the reason for this seeming catholicity probably lies in a loose association with the nests and runs of small mammals in general, shared no doubt by some of its allies. I had never before found it in this district; but a specimen was taken long ago by Sharp at Eltham, barely two miles distant, and apparently referred by him to '*glyptocephalus* Saulcy' (see Fowler, 1889, *Col. Brit. Isl.* 3: 75 under *N. carinatus*; Allen, *l.c. supra*). Another (and by no means common) Scydmaenid, *Euconnus fimetarius* Chaud., occurred sparingly at the same time in the straw sifting, though never seen there on any of several earlier occasions; this species, however, is tolerably well known from the London suburbs and West Kent generally, but doubtless most records from the former area are old. — A. A. ALLEN.

PARARGE AGERIA L. (SPECKLED WOOD) IN WESTER ROSS — The recent note by P. K. Kinnear regarding this butterfly in Fife (*Ent. Rec.* 98: 21) prompts me to record that several were seen on 19th August 1985 along the track leading east through the Inverlael Forest towards Ben Dearg. The species appeared well-established, but is not recorded by Heath, Pollard & Thomas (*Atlas of Butterflies in Britain and Ireland*). A. J. SHOWLER, 12 Wedgwood Drive, Hughenden Valley, High Wycombe, Bucks.

AN AUTUMN VISIT TO CAPE CLEAR ISLAND,
CO. CORK, IRELAND

By MICHAEL G. W. TERRY*

During an eighteen day (September 28th to October 15th, 1985) visit to Cape Clear Island bird observatory I took the opportunity to operate a 125W m.v. lamp from the observatory's premises. Very little work on the moths has been undertaken at this site. The limited data available concerned mainly day flying species recorded by ornithologists. The opportunity to explore this new area, entomologically, proved to be very exciting and rewarding.

My aim in operating a trap was, primarily, to record migrant species. Cape Clear is ideally situated for this task, lying some five miles from the Cork mainland. It is the most south-westerly point of Ireland bar the Fastnet Rock lighthouse, lying some four miles beyond.

Several westerly gales coincided with my visit making trapping impossible in such conditions. I managed to operate the trap on thirteen nights with ideal conditions for migrants occurring on four: September 28th and 30th; October 12th and 13th, respectively. South-easterly winds with drizzle or fog predominated during the four nights.

Common migrant species were plentiful. More interestingly, rarer immigrants were caught with some regularity. No less than four *Mythimna loreyi* were seen; one on October 9th, two on the 12th and one on the 13th. Two *Mythimna unipuncta* were trapped; on September 28th and October 13th. *Spodoptera exigua* was seen on September 30th; *Heliothis armigera* on October 12th and *Agrius convolvuli* on October 11th.

Phlogophora meticulosa and *Autographa gamma* were recorded commonly, with 60+ *meticulosa* on October 12th. Variable numbers of *Udea ferrugalis*, *Nomophila noctuella*, *Agrotis ipsilon*, *Noctua pronuba* and *Peridroma saucia* were also caught.

Resident species were noted but the number and variety were small. Interesting residents included *Standfussiana lucerneae*, *Xestia agathina*, *Allophyas oxyacanthae*, *Photodes pygmina* and *Stilbia anomala*.

Microlepidoptera were occasionally noted, including *Hofmannophila pseudospretella*, *Eudonia angustea* and *Emmelina monodactyla*. Noteworthy captures were two specimens of the tortricoid *Crociosema plebejana* on September 30th and October 13th. This species had hitherto been recorded only once before in Ireland by H. C. Huggins in Co. Kerry, 1966 (*Ent. Rec.* 78:256).

No geometrids were recorded, and *Macroglossum stellatarum*, usually noted by ornithologists here, was absent.

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The twenty nine species recorded are as follows: *Hofmannophila pseudospretella* Stt.; *Crociosema plebejana* Zell.; *Alucita hexadactyla* L.; *Eudonia angustea* Curt.; *Udea ferrugalis* Hubn.; *Nomophila noctuella* D. & S.; *Emmelina monodactyla* L.; *Agrius convolvuli* L.; *Agrotis ipsilon* Hufn.; *Standfussiana lucerneae* L.; *Noctua pronuba* L.; *Noctua comes* Hubn.; *Peridroma saucia* Hufn.; *Xestia xanthographa* D. & S.; *Xestia agathina* Dup.; *Mythimna unipuncta* Haw.; *Mythimna loreyi* Dup.; *Aporophyla nigra* Haw.; *Allophyas oxyacanthae* L.; *Omphaloscelis lunosa* Haw.; *Amphipyra tragopogonis* Clerck; *Phlogophora meticulosa* L.; *Photedes pygmaea* Haw.; *Luperina testacea* D. & S.; *Hydraecia micacea* Esp.; *Spodoptera exigua* Hubn.; *Stilba anomala* Haw.; *Heliothis armigera* Hubn.; *Autographa gamma* L.

My relatively short visit to Cape Clear Island has thus demonstrated the potential of this site for recording migrant Lepidoptera.

Acknowledgement

I would like to thank David Borton, the observatory warden, for permission to operate an m.v. lamp at the observatory and for every encouragement.

BUTTERFLIES FROM ASWAN, UPPER EGYPT, DECEMBER 1983 – During a day in Aswan, on 29th December 1983, I had the opportunity to undertake a couple of hours collecting along the banks of the Nile. The butterflies recorded there were few in both species and individuals and most of them were well past their prime, suggesting the time of year was unsuitable. The only butterfly found to be somewhat abundant was *Azanus ubaldus* Stoll, always in proximity of and associated with *Acacia* trees. The species recorded were as follows (see also Wiltshire, E. P. 1948. The Lepidoptera of the Kingdom of Egypt. *Bull. Soc. Fouad I Ent.* 32 : 203-226).

LYCAENIDAE : *Deudorix livia* Klug; *Lampides boeticus* L.; *Syntarucus pirithous* L. – a single female whose genitalia were found to be identical to those of *pirithous* from Southern Europe, thus excluding possibility of its being a member of one of the other closely allied African *Syntarucus* species.; *Azanus ubaldus* Stoll. a number associated with the *Acacia* trees that are situated at the edge of the green zone that runs along the Nile; *Chilades eleusis* Demaison – the genitalia confirm them as *Chilades* sp. and they are here placed under *eleusis* on the basis of superficial affinities to the series confirmed as *eleusis* in the B.M.(N.H.). DANAIDAE: *Danaus chrysippus* L. a single male seen. JOHN G. COUTSIS, 4 Glykonos Street, Athens 10675, Greece.

PLATYPALPUS ARTICULATOIDES (FREY)
(DIPT., EMPIDIDAE) NEW TO BRITAIN

By A. A. ALLEN, B.Sc.*

While staying for a few days with friends at Foulnden, near Swaffham in West Norfolk (TL 769 900), in late June, 1979, I met with a tiny yellow-legged *Platypalpus* in some numbers at two spots about a mile apart, in the course of sweeping long grass and other roadside herbage. Both sites were more or less overhung by or at least adjacent to trees or shrubs, otherwise they appeared to have no special character in common. Of the sample I succeeded in collecting, only one fly, a female, chanced to survive the hazards of storage and eventual pinning in reasonable condition, and this, whilst keying out to *P. articulatus* Macq. in Collin (1961: 191-2), seemed not to agree fully with his description of that species. With the co-operation of Mr. K. G. V. Smith at the British Museum (Nat. Hist.) it was submitted to Dr. P. Grootaert in Brussels, who duly returned it as *P. articulatoides* (Frey, 1918), a species new to the British list. In a highly informative letter, complete with drawings, he points out that this species, *articulatus* Macq., and *maculimanus* (Zett.) form a group of closely similar species, the latter not being a synonym of *articulatus* as hitherto supposed. The following is an adaptation of the key kindly furnished by Dr. Grootaert; *P. maculimanus* is included, since it will most likely prove to be British.

Very small grey-dusted species with legs largely yellow; one pair of vertical bristles; antennae short, yellow with segment 3 black; mid-tibial spurs very short, blunt, shovel-shaped — this feature requires to be viewed sideways, as, seen from above, the spur can appear to taper to a point.

1/2 Palpi and coxae yellow; front tarsi with all segments sharply and deeply black-annulated; other tarsi not annulated but apical half or more of terminal segment brown to black. *Male*: left periandrial lamella with very long, stiff, yellow to whitish bristles on its outer margin *articulatoides*.

2/1 Palpi and the four hinder coxae brown to black; front tarsi with segments 1, 2, and 5 black-annulated, but 3 and 4 almost yellow; other tarsi either brown-annulated or largely dark. *Male*: left periandrial lamella with only very short bristles *on its outer margin*.

3/4 Spur all yellow; ♂ left periandrial lamella with about six long *black* bristles *near tip* *articulatus*.

4/3 Spur with black tip; ♂ left periandrial lamella with only very short bristles *maculimanus*.

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Dr. Grootaert further points out that *P. articulatus* in Chvála (1975: 181-3) is in fact *P. maculimanus*, as proved by his figures of the male genitalia (fig. 452) and of the middle leg which shows a dark-tipped spur (fig. 225). A description and figures of *P. articulatooides* are given by Chvála (pp.183-4); he records it as rare in Denmark and Fennoscandia, North Russia and Latvia, Czechoslovakia and Austria, and as found on ground-vegetation and bushes from the end of May to July.

Last year I was able to revisit the Norfolk locality and was at length successful in locating the colony in Foulden village. The fly's headquarters here proved to be a piece of rough, overgrown open ground partly enclosed by hedges on two sides and row of tallows on a third; it was, however, not to be found at all on these, but only by sweeping the ground-vegetation. The sexes were in about equal numbers. The nearby roadside verges and hedgebanks also were well swept, but yielded none. I searched, too, for the other colony without success, doubtless on account of recent local changes.

It is difficult to be sure that *P. articulatooides* has not previously been taken in this country and confused with *P. articulatus*. Probably this has not occurred, to judge from Collin's account of the latter species (*l.c. supra*) — even though his description of the front tarsal annulation scarcely agrees with the above diagnosis. In discussing its synonymy he mentions and briefly characterizes '*articuloides* Frey' (*sic*), as a closely allied species described from North Russia. A further significant point is that, as Collin notes (and in strong contrast to British experience of *articulatooides*), only females of *articulatus* appear so far to be known here.

Acknowledgements

I am indebted to Dr. P. Gootaert for identifying the specimen sent and for providing valuable information not then published; to Mr. K. G. V. Smith for his good offices in the matter; and to my friends Mr. and Mrs. A. W. Gould, without whose kind hospitality the above record would not have been made.

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Collin, J. E., 1961, *British Flies*, 6 (Empididae), Cambridge.

[Since writing the above I have heard from Mr. Ivan Perry, of Cambridge, that he took *P. articulatooides* last summer in that

county. At his request, I gladly seize the opportunity to append his records here:—

2♂♂, 1 ♀, 1.viii.85, and 3♂♂, 6 ♀♀, 3.viii.85, all by sweeping *Sparganium erectum* at the edges of two ponds at Quy Fen, Cambs. (TL 513 628).

The flies were identified by Dr. Ian McLean. It will be noticed that the site of Mr. Perry's captures — close to water — differs considerably in character from that of the Norfolk occurrences. — A. A. A.]

“IT IS FOUND . . . ON ALL SORTS OF LOW PLANTS”

By DENIS F. OWEN*

The above title could have been taken from almost anywhere in Richard South's *Moths of the British Isles* (Warne, London), first published nearly eighty years ago, and still the standard source of information on larval food-plants. In fact it comes from South's account of the food-plants of *Melanchra persicariae* (dot moth), one of the many species described as feeding on “low plants.”

Table 1 summarises the families and species of plants utilised by the larvae of four species of Noctuidae in a garden** at Leicester in 1972-84. The four species, *Lacanobia oleracea* (bright-line brown-eye), *Mamestra brassicae* (cabbage moth), *Melanchra persicariae* (dot moth) and *Phlogophora meticulosa* (angle shades) are abundant in the garden and larvae are easily found by searching or beating the foliage of plants. The sample is not exactly random — some plants are easier to search than others — but is otherwise unselected, enabling generalisations to be made.

It is apparent that each of the four species of moths exploits an exceedingly wide range of families and species of plants. Not all could be described as “low plants”, as included in the list are such species as *Malus sylvestris* (apple), *Sambucus nigra* (elder) and *Betula pendula* (birch). What is especially apparent is that the larvae of these moths are in every sense generalist feeders, even though a further 43 families of plants are recorded from the garden and are not listed as food-plants. Each moth exhibits what appears to be an indiscriminate choice of food-plants, and yet only six of the 35 families scored are used by all four species, eight by three species, nine by two species, and the

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**66 Scraptoft Lane, Leicester.

remainder by one species only. Furthermore the number of plant species utilised from each family is small compared to the number available; why, for example, with 54 available species of Compositae, are only 8, 7, 8, and 7, respectively, recorded as food-plants? Finally, although these moths are good examples of South's "low plant" feeders, they also occur on woody vegetation and ferns, although never (in this garden) on grasses and conifers.

Plant family	Species of plant in garden	Species eaten by			
		<u>Lacanobia</u> <u>oleracea</u>	<u>Mamestra</u> <u>brassicae</u>	<u>Melanchra</u> <u>persicariae</u>	<u>Phlogophora</u> <u>meticulosa</u>
Aceraceae	1	-	1	-	-
Berberidaceae	2	1	1	-	-
Betulaceae	2	1	-	1	-
Boraginaceae	6	1	1	1	3
Buddleiaceae	1	1	1	1	1
Cannabaceae	1	-	1	1	-
Caprifoliaceae	4	-	1	1	-
Caryophyllaceae	11	1	-	-	1
Chenopodiaceae	4	1	1	1	-
Compositae	54	8	7	8	7
Convolvulaceae	3	2	1	-	1
Crassulaceae	6	-	1	-	1
Cruciferae	18	2	1	1	6
Dipsacaceae	1	1	-	-	-
Geraniaceae	2	1	-	-	-
Grossulariaceae	4	2	2	2	-
Guttiferae	3	-	-	1	-
Iridaceae	8	1	1	1	-
Labiatae	24	2	6	5	4
Leguminosae	15	2	3	1	-
Malvaceae	3	-	-	2	1
Okaceae	5	-	-	1	-
Onagraceae	7	-	1	-	-
Oxalidaceae	2	1	-	-	-
Papaveraceae	6	-	1	-	1
Polypodaceae	1	-	-	1	-
Polygonaceae	6	1	-	-	-
Ranunculaceae	10	1	1	1	-
Rosaceae	21	1	1	3	1
Salicaceae	3	-	-	1	-
Saxifragaceae	5	-	-	1	-
Scrophulariaceae	11	-	-	-	2
Solanaceae	14	3	1	1	-
Umbelliferae	9	1	1	-	2
Urticaceae	2	-	1	1	-
Families	35	21	22	22	13
Species	275	35	36	37	31

Table 1. Larval foodplants of four British noctuids.

INTERSPECIFIC HYBRIDISATION IN THE COCCINELLIDS: SOME OBSERVATIONS ON AN OLD CONTROVERSY

By HEATHER IRELAND, PETER KEARNS and MICHAEL MAJERUS*

Suggestions by Marriner that *Adalia bipunctata* Linn. and *Adalia decempunctata* Linn. freely interbreed to produce the hybrid *biabilis* Marriner, have been justifiably refuted by Capra. Here we report the production of hybrids between these two species. We show that the hybrids are extremely variable in colour and pattern; that they are generally sterile; and that examination of the genitalia indicates diagnostic features by which the hybrids may be identified.

Reports of interspecific hybridisations in ladybirds are rare, but Marriner (1926) published some sparse notes on hybridisation experiments between the two-spot ladybird (*A. bipunctata*) and the ten-spot (*A. decempunctata*). His experiments started with the chance observation of a hybrid mating between these species in one of his breeding boxes. He did not give the number of crosses he carried out, or the number of progeny he obtained, but he found an unusual form in the offspring. This he called *Coccinella* hyb. *biabilis*, and despite the fact that he knew individuals of this type were found in the wild, he argued that it was a true hybrid. In fact, he thought it occurred in natural populations as the result of wild hybridisations. He even speculated that the wild hybrids might be "a new species in process of evolution".

The conclusions of these experiments were convincingly rejected by Capra (1926). He pointed out that *biabilis* figured by Marriner is not exceptional as it is a recognised form of *A. decempunctata*, that is to say, f. *decempustulata* Linn. (see Mader, 1926-1937) which is common throughout Europe, and is in fact, one of the forms described by Linnaeus. In addition, he criticised Marriner for not describing the conditions of his experiments, and for the lack of detail on the precautions taken to isolate mating pairs and their offspring. He suggested that Marriner had observed a hybrid mating, and together with the presumed offspring of this pair, reared other specimens of both species from his mating cage; but only when he observed the postulated hybrid offspring, did he think of its origins. Capra said that it was more likely that the hybrid was simply a form of *A. decempunctata*. This seems plausible as f. *decempustulata* is said to be genetically recessive to the nominate form, *decempunctata*, so it is quite reasonable that this form should segregate out from a parental population in which it is absent. Capra's conclusions are further justified when one considers the vague description of the

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experiments, which was given by Marriner. As a result, Marriner's conclusions have been largely discounted (see Iablokoff-Khnzorian, 1982).

We have doubts about some of Marriner's other general observations in his 1926 paper. For example, he suggested that typical forms of *A. bipunctata* predominate in the spring, while melanic forms predominate later on in the summer months. This is not the case in British populations (Creed, 1966, 1975; Muggleton, 1978; Majerus, pers. obs). Some of his data appears nonsensical for he reports an increase in the frequency of melanic forms from 30% to 82% in an unspecified locality between June 1921 and August of the same year, and reports that these figures were repeated in several other years. The selective coefficients to produce this change are extremely improbable. We also disagree with his observation that typical forms of *A. bipunctata* are more difficult to rear than the melanic forms. We have reared thousands of specimens of both forms and find no obvious differences in fertility, viability or fecundity; and when all our data is pooled from broods in which both melanic and typical forms segregate, it is the *typica* form which is in excess over expectation. He also states that under starvation conditions, dark forms do not die off as quickly as typical forms; again we disagree and suggest that the reverse is in fact true.

Although we are convinced by Capra's arguments, we decided to attempt to hybridise *A. bipunctata* and *A. decempunctata*, because the debate could never be properly resolved until critical experiments were carried out. Probably the most important requirement was to begin by obtaining individuals of both species which we knew to be virgin. So we isolated a number of ladybirds of each species as soon as they emerged from their pupae, and kept each individually for about a fortnight before they were used for crosses.

Six pairs were set up initially, each couple being kept isolated in a petri-dish. They were fed every day on live pea aphids (*Acyrtosiphon pisum* Harris), which were added to the petri-dishes. The two species readily mated, but the vast majority of the eggs which were laid were infertile. However, two crosses produced a few fertile eggs and these eventually led to adult hybrids. One cross was between *A. bipunctata* f. *pruni* Ws., and *A. decempunctata* f. *decempustulata*. This cross produced 10 progeny. The second cross was between a melanic *A. decempunctata* f. *bimaculata* Pont., and a melanic *A. bipunctata* f. *quadrifasciata* Scop. This produced just two progeny. The parents and some of the progeny of these two crosses are shown in figures 1a and 1b.

Various investigations were carried out on the adult hybrids. Firstly, the patterns on the elytra show that they are not of a single hybrid type as inferred by Marriner, but rather, they display a great variety of patterns. So from the first cross, some progeny had elytra which were more or less like the *A. bipunctata* parent.

The pronota of these were *bipunctata*-like in one, and *decempunctata*-like in the others. Other progeny were similar to the *A. decempunctata* parent, but had *bipunctata*-like pronota. Still others were similar to the more normal types of *A. decempunctata*, so fig. 1a shows one offspring which is indistinguishable from *f. octomaculata* Mull. It is notable that all the progeny had brown or orange legs, characteristic of *A. decempunctata* (in Britain *A. bipunctata* has black legs). The two offspring from the second cross were most curious as both were almost completely black, and so unlike either parent. Again, they had brown rather than black legs.

Secondly, the hybrids were tested for fertility, but they were found to be infertile both in crosses amongst themselves and with either true *A. bipunctata* or *A. decempunctata* mates. Dr. S. A. Henderson (Department of Genetics, Cambridge) examined four males and found a variety of causes to account for their sterility. In one case, the testes were malformed and in another, there appeared to be no sperm formation. Finally, in two cases, the chromosomes behaved aberrantly during sperm formation so that chromosome breakages, and univalent chromosomes, were common.

Finally, the hybrids were examined by Mr. R. D. Pope (British Museum, Natural History). His opinion is that while the hybrids have unique features, they also share characteristics with both parent species. For example, all the hybrids have the strong look of *A. decempunctata*, but with the black mesapimera and metapimera of *A. bipunctata*. His other major observation was that the infundibula of all the female hybrids were similar to each other, and they were unique, being readily distinguished from those of both parental species. Despite this, the female genitalia had more in common with *A. bipunctata* than *A. decempunctata*.

We have subsequently obtained three progeny from another hybrid cross between *A. decempunctata* f. *decempustulata* and *A. bipunctata* f. *bipunctata* (see fig. 1c). In this case, all the progeny were fairly similar to *A. bipunctata*, but again had brown legs.

Although we cannot be certain, the results of our work lead us to the conclusion that Capra was right in claiming that Marriner did not obtain genuine hybrids; despite the fact that the two species do hybridise. If Marriner had obtained genuine hybrids it is unlikely that he would have obtained only the form *biabilis/decempustulata*.

Despite the probability that Marriner did not obtain hybrids, our final observations are concerned with his suggestion that the hybrid between *A. bipunctata* and *A. decempunctata* might be a new evolving species. This seems unlikely because hybrid matings are rare in the wild though they have been occasionally observed. Furthermore, although we have obtained hybrid matings in the laboratory, fewer than 1% of any eggs laid are viable.



Figure 1a. Hybrid cross 1. *A. decempunctata* f. *decempustulata* parent (top left) x *A. bipunctata* f. *pruni* parent (top centre), with five hybrid progeny.



Figure 1b. Hybrid cross 2. *A. decempunctata* f. *bimaculata* parent (extreme left) x *A. bipunctata* f. *quadrimaculata* parent (inside left), with hybrid progeny.

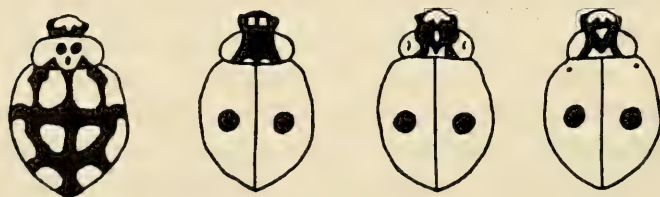


Figure 1c. Hybrid cross 3. *A. decempunctata* f. *decempustulata* parent (extreme left) x *A. bipunctata* f. *bipunctata* parent (inside left), with hybrid progeny.

In fact, the process of speciation by interspecific hybridisation seems to have been at best, very rare in the animal kingdom, because of the infertility of hybrids. This normally occurs because of differences between the two sets of parental chromosomes, which means they are unable to pair and separate correctly during gamete formation. Speciation through interspecific hybridisation is known among plants, because they are more readily able to indulge in polyploidy. This occurs when the chromosomes replicate without subsequent cell division, thus producing cells which contain two copies of each chromosome. These can then pair and divide normally. In animals polyploidy is extremely rare. In any case, the fact that the ladybird hybrids are sterile as the result of malformations in both gonads and chromosome structure, means that the two species are reproductively isolated from each other. This is entirely consistent with the normal pattern of interspecific hybridisations in animals, so it is extremely unlikely that Marriner's suggestion is true.

Acknowledgements

We thank Dr. S. A. Henderson and Mr. S. Albrecht for their cytological studies and Mr. R. D. Pope for his morphological and anatomical investigations. We would also like to thank Ms. D. Sommaro for her translation of Capra's original paper.

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RHOPALOCERA FROM KEFALONIA, ZAKYNTHOS,
SAMOS AND CHIOS ISLANDS (GREECE) AND THE
KUSADASI REGION (SW TURKEY)
IN 1983 AND 1984

By D. E. GASKIN* and E. A. LITTLER **

Introduction

Distributions of Lepidoptera in Greece are still imperfectly known, largely as a result of the small number of entomologists who have worked there. Significant changes in agricultural and forestry practices, as well as urban and industrial development, have taken place since the studies of naturalists such as Fountaine (1902), Rebel (1936), Straubenzy (1932) and others. For our knowledge of the present-day fauna we are indebted to Coutsis (1969, 1972: two summary papers among his many significant contributions), Bretherton (1966, among others), Dacie *et al.* (1970, 1972), Koutsaftikis (1974) and a few others. Nevertheless, many parts of the country remain lightly or uncollected, or have only been surveyed at one time of year.

The present article provides some information on Rhopalocera taken largely between early May and the end of June 1983-84 (with a few records prior to that period), in Kefalonia and Zakynthos off the Adriatic coast, and from Samos and Chios off the coast of Turkey. These are all islands of considerable size, totalling in surface area the equivalent of somewhat more than one third that of Crete, yet there is little published information of the fauna of the first two, and most data concerning Rhopalocera of the Dodecanese-northern Sporades date back 45 years or more (Betts, 1922; Turati, 1929; Straubenzy, 1932; Rebel, 1936; Hartig, 1940). In 1983 some limited collecting was carried out on the Turkish mainland adjacent to Samos; these results are also included here. Kefalonia was collected in the first half of May 1983; Zakynthos in the first half of June 1984; Samos in the second half of May 1983 and Chios in the second half of May 1984. The Turkish collecting was done in late May 1983.

In total, 49 species of butterflies were captured, of which 29 were recorded from Kefalonia (2 only there; *P. alexanor* and *G. farinosa*), 28 from Zakynthos (3 only there; *H. volgensis*, *L. duponceli* and *O. venatus*), 19 from Samos (2 only there; *C. alceae*, and *P. thrax*), 33 from Chios (5 only there; *M. cinxia*, *M. phoebe*, *P.*

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anthelea, *N. acaciae* and *E. marloyi*) and 17 from the Kusadasi — Selcuk — Efeses region (1 only there; *C. orientalis*).

The majority of species were satisfactorily identified using the standard work of Higgins and Riley (1983); some genitalia of *Hipparchia* were dissected for comparison with the figures given by Coutsis (1983) to confirm specific identities. John Coutsis dissected the Zakynthos material of this genus and kindly reported his confirmation that the specimens were *H. volgensis*. The range of variation in *Maniola jurtina* on Zakynthos exceeded that indicated by Higgins and Riley (1983) and even that figured by Thomson (1969). This material is still under study. The *Maniola* males from Samos and Chios were apparently all *telmessia* although the females from both Samos and Chios were superficially almost indistinguishable from the *jurtina* of Zakynthos. This latter material also requires detailed examination. Apart from the new record for *H. volgensis*, the most interesting capture was a single male *Pelopidas thrax* (Hübner) in a dry gully between Samos town and Vathi. The specimen was a male and identifiable by the sharp white androconial streak on each forewing. Larsen (1974) believed that its limit of range on the mainland was Syria while Bretherton (1974) reported a specimen from Cyprus.

Notable absences in early May on Kefalonia were *Anthocharis cardamines* and *Pontia daplidice*; however the weather was cool and windy after a hotter spell in April and the spring flights may have finished. Butterflies were still scarce on Mt Enos above 3,000 ft, and similar scarcity was evident during collecting on the Vrachionas spine in Zakynthos, where it was again very windy and cool. At lower altitudes on Kefalonia large patches of "Analatos" *Centranthus ruber* (L.) were covered in Papilionidae and Pieridae on still days. *Lampides boeticus* on Chios was closely associated with 'Sparto' *Spartum junceum*. On the same island most Nymphalidae were taken on fragrant *Lantana camara* and flowering bramble.

The transliteration of place names from Demotic Greek to English is always a vexing problem because standard spellings are still not universally used. In this contribution localities are spelled for convenience as in the Toubis series of maps of the Grecian islands, published in Athens and widely available to the visitor. Turkish spelling is used throughout for the localities on the mainland; these are included in Fig. 1. 'Ag.' is used as a standard abbreviation both for Agiou and Agia in this article. The authors do not follow the generic name change for *Pieris rapae* given in Higgins and Riley (1983).

Results

Papilio machaon L. GREECE, Kefalonia: Castle Ag. Giorgiou; Kourouklata, Chios: Kardamila.

- Papilio alexanor* Esp. GREECE, *Kefalonia*: Ag. Giorgiou, Ag. Irini.
Iphiclides podalirius L. GREECE, *Kefalonia*: Lassi, Argostoli, Kourouklata, Ag. Irini, Lixouri, Assos, Fiskardo, Sami, Frangata, Poros. *Zakynthos*: Planos, Keri, Romiri, Agalas, Vassilikos. *Samos*: Vathi, Kokkari, Ireon, Pithagorio, Mitilinoi. *Chios*: Kardamila, Marmaron, Chios, Pyrgi, Mesta. TURKEY: Kusadasi, Efeses.
- Aporia crataegi* L. GREECE, *Kefalonia*: Kourouklata, Ag. Irini. *Chios*: Nea Moni. TURKEY: Efeses.
- Pieris brassicae* L. GREECE, *Kefalonia*: Ag. Irini. *Zakynthos*: Planos, Agalas, Keri, Vassilikos. *Samos*: Vathi. *Chios*: Kardamila, Marmaron, Nea Moni. TURKEY: Efeses.
- Pieris rapae* L. Ubiquitous- all localities.
- Euchloe simplonia* Frey. GREECE, *Kefalonia*: Ag. Giorgiou, Kourouklata, Assos. *Zakynthos*: Planos, Ag. Nikolaos, Agalas. *Samos*: Vathi, Kokkari. *Chios*: Kardamila, Nea Moni. TURKEY: Efeses.
- Colias crocea* Geoff. GREECE, *Kefalonia*: Ag. Giorgiou, Ag. Irini, Kourouklata, Assos, Fiskardo. *Zakynthos*: Planos, Vassilokos, Keri, Romiri, Agalas, Ag. Nikolaos. *Samos*: Samos, Vathi, Kokkari, Ireon. *Chios*: Kardamila, Marmaron, Mesta, Pyrgi, Nea Moni. TURKEY: Kusadasi, Efeses.
- Gonepteryx rhamni* L. GREECE, *Kefalonia*: Assos, Kourouklata, Mt. Enos. *Zakynthos*: Planos, Agalas, Ag. Leon.
- Gonepteryx cleopatra* L. GREECE, *Kefalonia*: Kourouklata, Assos, Ag. Irini, Sami. *Zakynthos*: Planos, Agalas, Ag. Nikolaos, Keri, Vassilikos, Alikes, Romiri. *Chios*: Kardamila, Nea Moni. TURKEY: Efeses.
- Gonepteryx farinosa* Zell. GREECE, *Kefalonia*: Frangata.
- Leptidea sinapis* L. GREECE, *Kefalonia*: Kourouklata, Frangata, Assos, Mt. Enos, Ag. Irini. *Zakynthos*: Agalas, Vassilikos, Keri, Romiri.
- Leptidea duponcheli* Staud. GREECE, *Zakynthos*: Planos, Agalas.
- Limenitis reducta* Staud. GREECE, *Kefalonia*: Assos, Sami. *Zakynthos*: Keri, Vassilikos. Agalas. *Samos*: Vathi. *Chios*: Kardamila, Nea Moni.
- Vanessa atalanta* L. GREECE, *Kefalonia*: Ag. Giorgiou, Kourouklata, Frangata, Ag. Irini. *Zakynthos*: Planos, Agalas, Keri, Ag. Nikolaos, Vassilikos, Alikes. *Chios*: Nea Moni.
- Cynthia cardui* (L.). GREECE, *Kefalonia*: Kourouklata, Frangata, Mt Enos (5000'), Ag. Irini, Sami. *Zakynthos*: Planos, Agalas, Ag. Nikolaos. *Chios*: Kardamila, Marmaron, Nea Moni. TURKEY: Efeses.
- Polygonia egea* Cram. GREECE, *Kefalonia*: Fiskardo. *Zakynthos*: Planos, Ag. Nikolaos. *Samos*: Samos, Vathi, Kokkari. *Chios*: Kardamila, Marmaron, Nea Moni.

- Melitaea cinxia* L. GREECE, *Chios*: Kardamila, Nea Moni.
- Melitaea phoebe* Schiff. GREECE, *Chios*: Kardamila, Marmaron, Nea Moni.
- Melitaea didyma* Esp. GREECE, *Chios*: Kardamila, Marmaron, Nea Moni. *Samos*: Vathi. TURKEY: Efeses.
- Melitaea trivia* Schiff. GREECE, *Chios*: Kardamila, Marmaron, Nea Moni. TURKEY: Efeses.
- Hipparchia aristaeus senthes* Fruh. GREECE, *Chios*: Kardamila.
- Hipparchia volgensis* Mazochin-Porshnjakov. GREECE, *Zakynthos*: Agalas, Keri, Ag. Nikolaos, Romiri, Vrachionas Mts.
- Hipparchia syriaca* Staud. GREECE, *Kefalonia*: Mt. Enos (4000'), *Samos*: Vathi.
- Pseudochazara anthelea* Hübn. GREECE, *Chios*: Nea Moni.
- Maniola jurtina* L. GREECE, *Kefalonia*: Lassi, Katavathres, Minia, Assos, Fiscardo, Sami, Poros, Ag. Irini, Mt Enos, Frangata. *Zakynthos*: Planos, Vassilikos, Laganas, Keri, Agalas, Ag. Nikolaos, Ag. Leon, Volimes, Alikes, Vrachionas Mts, Machairdo.
- Maniola telmessia* Zell. GREECE, *Samos*: Samos, Vathi, Kokkari, Pithagorio, Mitilinioi, Pirgos, Karlovasi, Ireon. *Chios*: Kardamila, Marmaron, Chios, Nagos, Langada, Nea Moni, Pyrgi, Mesta. TURKEY: Kusadasi, Efeses.
- Coenonympha pamphilus* L. GREECE, *Kefalonia*: Minia, Romiri, Frangata, Ag. Irini. *Zakynthos*: Planos. TURKEY: Efeses.
- Lasiommata megera* L. GREECE, *Kefalonia*: Frangata, Ag. Giorgiou, Assos. *Zakynthos*: Planos, Agalas, Vassilikos. *Samos*: Vathi. *Chios*: Kardamila, Marmaron, Nea Moni. TURKEY: Efeses.
- Lasiommata maera* L. GREECE, *Kefalonia*: Ag. Giorigou. *Samos*: Vathi. *Chios*: Marmaron.
- Kirinia roxelana* Cram. GREECE, *Samos*: Vathi. *Chios*: Kardamila, Marmaron. TURKEY: Efeses.
- Nordmannia acaciae* (Fab.) GREECE, *Chios*: Nea Moni.
- Strymonidia spini* Schiff. GREECE, *Zakynthos*: Keri. *Samos*: Vathi.
- Callophrys rubi* L. GREECE, *Kefalonia*: Frangata, Assos. *Zakynthos*: Vassilikos. *Samos*: Vathi. *Chios*: Nea Moni.
- Lycaena phlaeas* L. GREECE, *Kefalonia*: Frangata, Assos. *Zakynthos*: Planos, Vassilikos. *Samos*: Vathi. *Chios*: Kardamila. TURKEY: Efeses.
- Lampides boeticus* L. GREECE, *Zakynthos*: Akrotiri, Vassilikos. *Chios*: Marmaron.
- Celastrina argiolus* L. GREECE, *Zakynthos*: Planos, Vassilikos. *Chios*: Kardamila.
- Glaucopsyche alexis* Poda. GREECE, *Kefalonia*: Mt Enos (3500'), Assos, Frangata. *Zakynthos*: Agalas.
- Pseudophilotes vicrama schiffermuelleri* (Hemming, 1929). GREECE, *Kefalonia*: Frangata, Mt. Enos (4000'). *Zakynthos*: Skopos, Vrachionas Mts. *Chios*: Kardamila.

- Aricia agestis* Schiff. GREECE, *Kefalonia*: Ag. Irini, Mt. Enos (4500'). *Zakynthos*: Planos. *Chios*: Kardamila.
- Polyommatus icarus* Rott. GREECE, *Kefalonia*: Assos, Mt. Enos (4000'), Ag. Giorgiou. *Zakynthos*: Vassilikos. *Chios*: Kardamila. TURKEY: Efeses.
- Spialia orbifer* Hoff. GREECE, *Kefalonia*: Frangata, Assos, Mt. Enos (4500-5000'). *Zakynthos*: Agalas, Ag. Leon. *Chios*: Nea Moni. TURKEY: Efeses.
- Carcharodus orientalis* Rev. TURKEY: Efeses.
- Carcharodus alceae* Esp. GREECE, *Samos*: Vathi.
- Erynnis marloyi* Bois. GREECE, *Chios*: Kardamila.
- Thymelicus acteon* Rott. GREECE, *Zakynthos*: Planos.
- Thymelicus sylvestris* Poda. GREECE, *Kefalonia*: Assos. *Chios*: Kardamila.
- Ochlodes venatus* Tur. GREECE, *Zakynthos*: Planos.
- Pelopidas thrax* Hübn. GREECE, *Samos*: Vathi.

Acknowledgements

The authors are very grateful to John G. Coutsis of Athens for critically reviewing our results and pointing out some errors and changes in nomenclature.

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Figure 1. Localities indicated in text. GREECE: *Kefalonia*: 1. Ag. Giorgiou, 2. Ag. Irini, 3. Argostoli, 4. Assos, 5. Fiskardo, 6. Frangata, 7. Katavothres, 8. Kourouklata, 9. Lassi, 10. Lixouri, 11. Minia, 12. Mt. Enos, 13. Poros, 14. Sami. *Zakynthos*: 15. Agalas, 16. Ag. Leon, 17. Ag. Nikolaos, 18. Akrotiri, 19. Alikes, 20. Keri, 21. Laganas, 22. Machairdo, 23. Planos, 24. Romiri, 25. Skopos, 26. Vassilikos, 27. Volimes, 28. Vrachionas Mts. *Chios*: 29. Kardamila, 30. Langada, 31. Marmaron, 32. Mesta, 33. Nagos, 34. Nea Moni, 35. Pyrgi. *Samos*: 36. Ireon, 37. Karlovasi, 38. Kokkari, 39. Mitilinoi, 40. Pirogos, 41. Vathi. TURKEY: 42. Efeses, 43. Kusadasi.

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A BELATED RECORD OF BISELACHISTA TRAPEZIELLA STAIN-
TON (LEP.: ELACHISTIDAE) FOR SCOTLAND. — Further to Dr.
K. P. Bland's interesting note on this species (cf. *Entomologist's
Rec. J. Var.* **98**: 27), I wish to record that in April 1973, I collected
mines and larvae of *B. trapeziella* in Argyllshire in the town of Oban
and nearby on Pulpit Hill, all in *Luzula sylvatica*, but unfortunately
failed to breed any. However, I kept the mines and recently on
submitting them to Dr. R. Knill-Jones, who knows the species well,
he kindly confirmed the determination. — J. M. CHALMERS-HUNT.

CELAENA HAWORTHII CURT. (HAWORTH'S MINOR) AND EUPI-
THECIA TENUIATA HUBN. (SLENDER PUG) ON JERSEY 1984 —
Single specimens of these two species were caught in the Rotham-
sted Insect Survey light trap on Jersey (Site No. 146) on 4-ix-84
and 20-vii-84 resp. and were determined by examination of the
genitalia. So far as I am aware *C. haworthii* and *E. tenuiata* have not
previously been recorded from the Channel Islands.

Thanks are extended to Mrs. R. Collier and Mr. G. Thomas for
operating the Jersey trap and to Mr. R. Long of the Societe Jersiaise
for his comments on these two species. ADRIAN M. RILEY, Ento-
mology Department, Rothamsted Experimental Station, Harpenden,
Herts.

MICROLEPIDOPTERA RECORDS
FROM SOMERSET

By R. J. HECKFORD*

I am prompted to write this as a result of reading Emmet's paper (1985) on microlepidoptera records from Somerset and noting the paucity of such records for the county during this century.

On 12th August 1974 and 30th November 1975 I noted a few species whilst travelling through Cheddar Gorge. I spent a day in the Winsford Hill area of Exmoor on 29th May 1976 and between 18th and 22nd June 1979 I was part of a Nature Conservancy Council team surveying the Somerset Levels. Otherwise I have not recorded microlepidoptera in the county.

I have listed those species which appear to be of interest. I have followed Emmet by indicating "new" county records by two asterisks and "new" vice-county records by a single asterisk. Turner (1955) did not use the vice-county system and so I have ascribed his records to vice-counties. The nomenclature follows Bradley & Fletcher (1979).

List of selected species

MICROPTERIGIDAE

Micropterix aureatella (Scopoli) VC5 Tarr Steps, Exmoor, locally common 29.v.1976. Turner, *op. cit.* gives one record from Brompton Regis (VC5) and one from Penselwood (VC6).

INCURVARIIDAE

Phylloporia bistrigella (Haworth) VC6 Canada Farm, one 20.vi.1979; Westhay, two 21.vi.1979. ("Scarce and local amongst birches", Turner).

Nematopogon metaxella (Hübner) VC6 Shapwick Heath Nature Reserve (SHNR), one 20.vi.1979. ("Very scarce in wooded areas", Turner).

PSYCHIDAE

**Luffia ferchaultella* (Stephens) VC6 Tadham Moor, cases common 21.vi.1979. Turner (under *L. lapidella*) states "Very local on lichen" and gives two records from VC5.

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GRACILLARIIDAE

Caloptilia betulicola (Hering) VC6 SHNR, larval cones on *Betula* not uncommon 20.vi.1979. First recorded by Emmet (1973).

Parornix betulae (Stainton) VC6 SHNR, larvae not uncommon 20.vi.1979; Westhay, larvae not uncommon 21.vi.1979. Possibly the only record since *The Victoria County History* (Hudd, 1906) is that of Emmet (1967).

Phyllonorycter lantanella (Schrank) VC6 Cheddar Gorge, mines on *Viburnum lantana* 30.xi.1975. The only recent records appear to be those of Emmet (1967).

P. vimimiella (Sircom) VC6 West Sedge Moor, one 19.vi.1979. First recorded by Emmet (1985).

YPONOMEUTIDAE

Ocnerostoma piniariella Zeller VC6 SHNR, one 20.vi.1979. *Scythropia crataegella* (Linnaeus) VC6 West Sedge Moor, several larvae 19.vi.1979. ("Very rare, or possibly no longer resident", Turner).

COLEOPHORIDAE

Coleophora coracipennella (Hübner) VC6 West Sedge Moor, one case on *Prunus spinosa* 19.vi.1979 which produced a male on 15.vii.1979, confirmed by dissection.

C. viminetella Zeller VC6 Westhay, one case on *Salix* sp. 21.vi.1979. ("Apparently rare", Turner). Recorded by Emmet (1985) from VC6.

C. binderella (Kollar) VC6 Westhay, a few cases on *Alnus* 21.vi.1979.

C. albidella Herrich-Schaffer VC6 Street Heath, one case 22.vi.1979. ("Appears to be very scarce", Turner). Emmet (1985) records one old case.

C. striatipennella Tengstrom VC6 SHNR, one 20.vi.1979. Apparently not recorded since Hudd (1906).

C. murinipennella (Duponchel) VC6 Canada Farm, one 20.vi.1979, confirmed by dissection.

C. caespititiella Zeller VC6 SHNR, one 20.vi.1979, confirmed by dissection.

ELACHISTIDAE

Elachista poae Stainton VC6 Westhay, one pupa 21.vi.1979, emerged 27.vi.1979.

GELECHIIDAE

Monochroa tenebrella (Hübner) VC6 SHNR, several 20.vi. 1979. Turner states "Very local amongst sheep's sorrel; sometimes common on the Turf Moors", giving only this locality.

***Syncopacma larseniella* (Gozmany) VC6 SHNR, two larvae on *Lotus uliginosus* 20.vi.1979, emerged 10.vii.1979, confirmed by dissection. Turner does not list this species; however, his records of *Stomopteryx vorticella* (Scopoli) (now *Syncopacma cinctella* (Clerck)) may refer wholly or in part to this species as the two have been confused.

COCHYLIDAE

Stenodes straminea (Haworth) VC6 West Sedge Moor, one 19.vi. 1979. ("Rather scarce and local where lesser knapweed flourishes", Turner).

TORTRICIDAE

**Clepsis senecionana* (Hübner) VC5 Winsford Hill, Exmoor, one 29.v.1976. ("Very scarce and local on heaths and moors", Turner). *C. spectrana* (Treitschke) VC6 North Moor, larvae locally common 18.vi.1979; West Sedge Moor, larvae locally common; 19.vi.1979; SHNR, larvae locally common 20.vi.1979. Adults subsequently bred from all three localities. ("Rather scarce and local", Turner). Emmet (1985) records one adult.

Acleris aspersana (Hübner) VC6 West Sedge Moor, larvae locally common on *Filipendula* 19.vi.1979, emerged vii.1979. ("Generally uncommon but it is widespread. . . Shapwick, common", Turner). Emmet (1967) confirmed that it was common at Shapwick.

Acleris notana (Donovan) VC6 Westhay, one larva on *Betula* 21.vi.1979, emerged 10.vii.1979. ("Rather uncommon", Turner). Emmet (1985) recorded larvae from VC5 and VC6.

Endothenia gentianaeana (Hübner) VC6 West Sedge Moor, larvae in *Dipsacus fullonum* 19.vi.1979, emerged 26.vi. to 18.vii.1979. ("Very local", Turner). Emmet (1985) records it from VC5.

Ancylis upupana (Treitschke) VC6 Canada Farm, one 20.vi.1979. Turner gives only one record, from Penselwood (VC6).

Epinotia sordidana (Hübner) VC6 SHNR, larvae common 20.vi.1979; Canada Farm, a few larvae 20.vi.1979; Street Heath, a few larvae 22.vi.1979. ("Scarce and local on alder", Turner).

Dichrorampha plumbagana (Treitschke) VC6 SHNR, one 20.vi. 1979. ("Very local", Turner). Emmet (1967) records it as common at Berrow and on the Bristol bank of the Avon.

D. sequana (Hübner) VC6 North Moor, locally very common 18.

vi.1979; SHNR, a few 20.vi.1979; Westhay, a few 21.vi.1979. ("Local and uncommon amongst tansy and yarrow", Turner).

PYRALIDAE

Oncocera semirubella (Scopoli) VC6 Cheddar Gorge, one 12.viii.1974. Turner states "Scarce and local on downs and hillsides" and gives only four records, all from VC6.

Acknowledgements

I am very grateful to Lt-Col. A. M. Emmet for his help in preparing this note and in particular for advising me of Turner's comments (as I do not have his list) and for ascribing Turner's records to vice-counties, and to the Nature Conservancy Council for allowing me to publish the records I made during the survey of the Somerset Levels.

References

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FOODPLANTS OF CACOECIMORPHA PRONUBANA HUBN. (TORTRICIDAE) — Whilst walking along the promenade at Eastbourne in the autumn of 1985 I took a few larval spinings on *Tamarix* spp. (Tamarisk) these, not unsurprisingly, turned out to be the above mentioned species. Mr. A. Foster informs me that he has recently found the species in Peterborough feeding on *Conyza canadensis* (L.) (Canadian Fleabane), whilst Mr. J. Riggall found the species (det. A. Forster) in London eating *Vitis vinifera* L. (Grapevine, apparently of the red variety!)

Finding on these widely separated plants prompts the question — Is there any plant this species will not eat? — M. PARSONS, The Forge, Russells Green, Ninfield, nr. Battle, East Sussex.

A HISTORY AND INVESTIGATION INTO THE
FLUCTUATIONS OF *POLYGONIA C-ALBUM* L.:
THE COMMA BUTTERFLY

By COLIN PRATT*

This beautiful butterfly, with its uniquely irregular silhouette, has a history in this country that is as interesting and territorially volatile as any British species. Before the well known expansion of range over the first half of this century, the insect had previously retreated to strongholds contained within about a dozen countries — having formerly enjoyed, during parts of the 19th century, a distribution that has been unequalled since. Its “true home has always been the counties of Gloucester, Hereford, and Monmouth” (Ford, 1945) and here and in parts of some other adjacent counties the butterfly was irregularly abundant in hop-gardens.

The species is usually double brooded, although three generations have been recorded during unusually hot summers, as in 1886 and 1911, and eggs are laid from Spring pairings of hibernated adults in late April and May. After these early larvae have emerged as adults in July and August the species pairs again, the resultant progeny quickly yielding the second brood of adults in the autumn. Eggs are laid on a variety of different foodplants, discussed later, but usually on hop or stinging nettle. In the south-east larvae were called “hop-cats” and pupae “silver-grubs” by the casual labour used for hop picking during the last century. A proportion of the July adults are thought to hibernate quickly after emergence, these being the darker, typical, form — although this has been challenged (Newman, 1950). Thus the species is thought to exclusively pass the winter hibernating as a typical adult, although it has been suggested that it might on occasion overwinter as a pupa (see Johnson, 1955; Archer-Lock, 1979).

Considerable confusion has existed over the bionomics of the light coloured form known as *hutchinsoni* Rob.; there was even disorder over exactly which season it was when the form occurred and this was not finally cleared up until the last decade of the 19th century by Bath (1893). Normally the form can only be found in mid-summer, although captive autumnal records exist for the year of 1910 (Anon., 1911) and for feral hibernated specimens both on the continent (*loc. cit.*; Bath, 1893) and in Derbyshire in 1950 (Garland, 1981). Of the Spring depositions, it has been recorded that up to the first 40% laid by individuals produce only *hutchinsoni* (Newman, 1908; Frohawk, 1914). It was also said that different foodplants produced the two forms, where “about one-fourth of those fed on currant were of the dark autumn form, and every one

*5 View Road, Peacehaven, East Sussex.

on hop were so. In former years, when fed on the common stinging nettle, *Urtica dioica*, there scarcely ever was a dark form" (Hutchinson, 1896). But, it has been known for many years that the species form "can be changed by cold from the first or summer generation to the second or autumn generation, and the second generation partly to the first by the application of warmth" (Standfuss, 1900). More recently the form has been attributed to the fast development of larvae (Howarth, 1973; Broom, 1977), the statements probably being stimulated by experiments by Harper and Waller (1950) which proved that the rate of larval development determines the adult form; as this varies with temperature and food succulence, all of the previously mentioned statements can be encompassed. The forms comparative infrequency in some areas, such as Bedfordshire (West, 1949) and north Wales (Dennis, 1971), can also thus be explained.

This light form was named after a Mrs. Emma Sarah Hutchinson of Grantsfield, near Leominster, in Herefordshire, and she was thought to be "better acquainted with this butterfly than any other entomologist in the kingdom" (Dale, 1890) — and no account of the Comma would be complete without this reference. Over the last few decades of the 19th century and later, Mrs. Hutchinson supplied many collectors with all stages of *c-album*, then fast becoming a national rarity — a Sussex enthusiast even reciprocating with *T. flammea* ova — but on publically offering examples gratis in 1881 found that "much embarrassment and not a little annoyance were caused to the local postal service by the overwhelming number of boxes of all sorts and sizes forwarded for that purpose . . . the number of requests for the butterfly was estimated by her as nearly 900" (Walker, 1938). Despite the fact that the insect had been reported as being double brooded by several authorities well over half a century before, doubt was still being expressed as late as 1871 (Newman) but Mrs. Hutchinson laid the misconception to rest; it was caused by consistently low numbers of larvae in the first brood and the presence of summer adults is still thought to be subject to favourable weather. Mrs. Hutchinson died aged 85 on December 10th 1905 but even just before the Second World War her "unrivalled experience" and "unstinted generosity" with the species was still held in high esteem (Walker, 1938).

The Decline to 1913

The first mention of the Comma butterfly in a work exclusively devoted to British insects was more than three centuries ago (Merrett, 1667) and until the early part of the last century it was thought to be a rather uncommon species. However, over two portions of the 19th century the insect enjoyed its widest distribution ever, within recorded entomological history — although even just after the mid 18th century *c-album* was established at least as far north as county

Durham. The butterfly was locally common in many counties up to the Scottish border and found less frequently even over the border in the early years of the 19th century, and again later, but before three decades had elapsed it had "become somewhat scarce everywhere within these last few years" (Stephens, 1828).

England

The insect almost disappeared from Hertfordshire after 1812; in parts of central Dorset it became very rare after 1816 and extinct after 1820 — completely disappearing from the county after about 1840, singletons returning in 1877, 1887, and 1898. Elsewhere the species became much less numerous in Epping Forest after about 1818 and in Kent and Sussex at around this decade. Uncommon in Huntingdonshire, the butterfly became even less frequent after 1832, the last report of numbers near the capital came from Penge in 1836, and it became rare in Suffolk during the same decade. Although Hertfordshire enjoyed a brief revival during the early 1830's the species became a very rare one there after that time. By now the insect was very scarce in every county along the south coast and this status was later confirmed as it was said that a "noticeable feature of its distribution is its absence from what may be called maritime lists" (Newman, 1871). This early decline manifested itself in a more consistent drop in numbers outside of its heartlands, and especially in local extinctions, but few county-wide disappearances occurred in the south over these years. This trend continued with the species becoming extinct in Cambridgeshire after the last pair were seen in 1842 and it declined in Cumberland after 1846, disappearing after 1850. Immediately after the middle of the century it returned to rarity in Essex and was soon again listed by an up-to-date chronicler as having "disappeared from many places where it was formerly abundant" (Stainton, 1857).

While the species was much less numerous over the second quarter of the 19th century there was an accompanying retreat from, and subsequent return to, the north; Cumberland and Westmoreland apart, there are few or no records north of Liverpool over those years. After the mid 1840's the butterfly was "first" reported from Derbyshire in 1855 when three were seen, in south Yorkshire in 1856, in Lancashire in 1857, in east Yorkshire in 1858, and it was common in north Lincolnshire at the same time; in 1861 the insect re-appeared in Durham and seven years later at Newcastle in Northumberland. This is a sequential progression northwards which reached its zenith in about 1870 in Scotland. In 1871 the species turned up in a number of unexpected places — including both east and west Sussex, Essex, Lancashire, Hampshire, Suffolk, and perhaps even Ireland.

This was a species "of very capricious habits in regard to geological range in this country, in some localities being a constant

resident, in others appearing and disappearing at intervals" (Newman, 1871); this was confirmed in 1857 and 1858 when a brief revival took place in many other counties but, Kent and Epping Forest apart, the insect was an uncommon one after this time south of a line drawn from the Wash to north Dorset, parts of Lincolnshire, and the whole of Lancashire. Lasting county-wide extinctions (termed as the last record before 1914) came to the Isle of Wight after 1860, to Norfolk after 1861, and the butterfly became very rare in Devon and extinct in Northumberland after 1868, and probably in Leicestershire during the same decade. Nevertheless the most extensive decline commenced after 1871; the last Lancashire record for 30 years was noted during this season and, apart from Clapham, the insect completely disappeared from the London area of the time after the following year. Elsewhere during this decade the species became extinct in Hertfordshire, Buckinghamshire, Suffolk, and Huntingdonshire. A large drop in numbers accompanied the retreat in territory over the 1870's and overall, apart from a few localities in counties such as Yorkshire and in Epping Forest, from 1872 to 1891 inclusive the insect was almost exclusively a rare one north of a line drawn through, and in, the counties of Greater London, Berkshire, Oxfordshire, Warwickshire, Staffordshire, and Cheshire. The species left Essex after 1888, after an increase in numbers in Wales and in its neighbouring counties in 1886 — and a larva was noted in Hampshire during this same season; over the years until the end of that decade the insect was also seen in Kent, Surrey, both east and west Sussex, Wiltshire, Dorset, and fairly commonly in Epping Forest and its homelands. During the 1890's the butterfly was noted four times from the east coast of Kent but it continued to decline elsewhere — as in east Worcestershire after 1892; before recolonisation, it was last recorded in Wiltshire in 1889, Nottinghamshire in 1893, Devon in 1894, and Dorset in 1898. Nevertheless, compared to the previous few decades, there was an increase in frequency in a number of midland counties during the 1890's — including Shropshire, Warwickshire, Staffordshire, and Herefordshire. After the turn of the century the species quickly became extinct, or extremely rare, in Northamptonshire, Lincolnshire, in Lancashire and Berkshire after 1901, in Warwickshire and Yorkshire after 1902, and in Surrey after 1906; it also left diminutive Rutland and Durham during this decade, from Staffordshire after 1908, and from Derbyshire after 1911. The butterfly was at its lowest ebb in this country in the year of 1913 when even in its most favoured haunts it was said to be rare (Frohawk, 1914). In summary, local declines and extinctions were reported throughout the 19th century, although comparatively few final countywide 19th century sightings can be listed until the 1860's. After territorial fluctuations in the north over the third quarter of the century, more than half a dozen counties lost the insect during

the 1870's and more followed during the next decade, but the worst period was from the early 1890's to 1913.

Numbers varied enormously from year to year; for example, in its Herfordshire stronghold the butterfly was abundant in 1875 but very rare both during the previous year and in the following two seasons; it was abundant there again in 1881 and scarce in 1884 and 1885, and abundant again in 1886 and 1887. Even in Durham, prior to 1865 "half a dozen might be swept off the flowers at one stroke of the net" (Barrett, 1893) but then it suddenly became rare, and finally extinct, for more than three-quarters of a century. Covering the period 1850 to 1913, the seasons not already mentioned when the species was recorded as being unusually common in its midland strongholds were 1857, 1858, 1864, 1865, 1866, 1887, 1892, 1893, 1901, and 1910; it was also notably common in north wales in 1882, 1883, and in 1896. Similarly, the insect was unusually rare in its heartlands in 1882, 1894, and 1913. Most of the sudden losses apparently occurred during the period of hibernation as these declines were reported on a yearly basis and not a seasonal one.

Scotland

The Scottish records have been admirably summarised (Thomson, 1980); the Comma was reported from Edinburgh prior to 1811 again at some time before 1846; it was also seen in Berwickshire and as far north as Fife and Alloa before 1835. But the species disappeared from Scotland around the middle of the century, returning in the late 1860's, as it was to be 1868 before it was seen again, in Roxburghshire; this was the same season as its penetration into neighbouring Northumberland and about two years later the insect was noted from three localities within Berwickshire — but these are the last unquestionable Scottish records.

Wales

The butterfly disliked the west facing coast of Wales but it was sometimes common in north Caernarvonshire and at Port Madoc; it was also irregularly frequent in Radnorshire, Flintshire, Montgomeryshire, Merionethshire, and Denbighshire, but rarely numerous in Brecknockshire and Glamorgan. Some important Welsh records were relatively recently brought to wider notice (Dennis, 1971) and, when examined with others, show that the species remained permanently established in the north Wales area (Flintshire, Denbighshire, Merionethshire, and Caernarvonshire), and in the south-east in Glamorgan, whilst records cease from Radnor during the 1870's (although it may well have remained established), and from Montgomeryshire after 1900, probably disappearing from Carmarthenshire at about the same time.

Ireland

There are only two reports of the insect in Ireland, in 1871 at Powerscourt and in about 1895 at Malahide, although doubt was put upon the first mentioned by the leading authority of that country at the time, Kane. Both records were later rejected by Donovan (1936) and ignored by Baynes (1964, 1970) and Nash (1975). However, both localities are about 80 miles north-west of the nearest mainland points on the Welsh coast across the Irish sea and there may well be more to the records than has previously been attributed, especially the first mentioned.

Despite the alarming retreat in range, the records indicate that *c-album* remained permanently established in a larger number of counties than has often been thought. At its nadir in this country the insect was still sometimes locally common in Herefordshire, Gloucestershire, Shropshire, and in the six Welsh counties previously mentioned; it also remained established, but less numerous, in Monmouthshire, north Somerset, west Worcestershire, near Oxford, and less certainly in south-east and north-west Kent, and on the Sussex border.

There has always been speculation over whether or not the butterfly remained established in Kent and Sussex, or that the occasional records that came to notice were due to foreign immigration or national vagrancy. Most leading entomological figures of the time believed that the Comma did not survive in these counties as a permanently established insect — although some notable authorities, such as N. D. Riley, disagreed at the time; my own sympathies lie with Mr. Riley. As has been noted, the butterfly was a common one in these counties over the early years of the 19th century, although this status quickly deteriorated to the point where usually only singletons were observed — but these sightings continued through the period of depression around the turn of the century. It was seen in Kent at least three times over this era (Chalmers-Hunt, 1960), in the far east of Sussex once, and several were reported on these borders in about 1905. At the time the area contained the highest concentration of hop-yards in the southern counties. In addition to the last two counties mentioned, Hampshire also poses a problem in that whilst the insect was at its lowest ebb elsewhere the species continued to be oddly seen but at relatively long intervals. Immediately before the main decline it was said that “it is rarely observed in the Farnham district” (Newman, 1871), in the Hampshire and Surrey hop-fields (although this position may well have been considerably different half a century earlier as the species was common in Sussex and Kent at about that time); at any event, a singleton was reported from the New Forest in 1909, the last previous sighting had come in 1886, and it was to be after the First World War before another record.

However, the possibility of artificial introduction was mentioned at the time and there is evidence to show that the practise did take place. Just as in modern times with other species, secret introductions may have partially clouded the intimate history of the Comma; before 1881 hundreds of larvae and pupae were released "in Surrey and elsewhere, hoping to introduce the species, but without success" (Hutchinson, 1881).

The evidence in favour of immigration from the continent being a factor in the history of this species in this country, within entomological historical times, is very limited — both in the number of reported "migrations", the circumstances surrounding these events, and the number of individuals involved. Modern authorities seem divided over the possibility, although it is positively listed as an immigrant by some (Chalmers-Hunt, 1960; Riley, 1970); it is more likely to be a species which is continually changing its range rather than, vagrants apart, being an immigrant in the accepted sense.

(to be continued)

CELASTRINA ARGIOLUS LINN IN FEBRUARY — In reply to Mr. J. E. Green's request for records of early sightings of blue butterflies (*Ent. Rec.* 98: 39-40) the following may be of note. On 24th February 1985, while successfully surveying the hedgerows for brown hairstreak, a male holly blue was observed for about 20 seconds near a village by the name of Kingsdon, Somerset (ST 530 270). That day was particularly warm and sunny but despite this the only other adult butterflies to be seen were two male brimstones. — N. W. LEAR, 178 St. John's Lane, Bedminster, Bristol BS3 5AR.

SCELIODES LAISALIS (WALKER) (PYRALIDAE) IN LEICESTERSHIRE — On 29 July a specimen of *Sceliodes laisalis* was collected from an m.v. trap operated in my garden at the address below. This appears to be the fourth British record, and the second chronologically. The moth was first reported in Middlesex in 1973, and there are single records for Surrey (1983) and Bedfordshire (1983) (Goater, B. 1986. *British pyralid moths*, Harley Books, Colchester). My specimen remained un-named until 1986 when it was submitted to Mark Sterling who kindly identified it.

Sceliodes laisalis is an African moth, recorded in Europe, and is reported to feed as a larva on tomato. Almost certainly the records thus far are of vagrant immigrants, but the possibility of importation with tomatoes (unlikely from Africa) cannot be ruled out. DENIS F. OWEN, 66 Scraptoft Lane, Leicester LE5 1HU.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1985

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

(continued from p. 163)

Colias croceus was generally reported as "not seen" and the total recorded was about 30, of which more than half were in October. The first was at Portland, Dorset on April 8, the second at Down-derry, east Cornwall, May 17, followed by another at Portland, May 27, then, the only record at Spurn Point, south east Yorkshire, June 8. Thereafter, singles at Portland, September 9, 21, Sandwich B.O., east Kent, August 28; also, at North Fambridge, north Essex, Ulverston, Westmorland, Port Down, south Hampshire on September 8, 3, 11 respectively, and in Sussex on July 15, August 17, September 22, 29. In October there seems to have been a very small but well spread influx, with more than five seen at Land's End and four in east Cornwall and on Scilly, a few in south Devon with the last at Plymouth, October 24. There were also singles in October at Patcham, Eastbourne and Beachy Head, east Sussex, Isle of Oxney, Kent and Walney Island, north Lancashire. The species was probably scarcer than in any year since 1963.

A. gamma alone among the usually common immigrant moths reached fairly good numbers. Hardly seen during April, it was reported on May 18 at Maldon, north Essex, at Milford, Surrey on May 25, and two were seen at Sandwich B.O. on May 31st, with other first records beginning from June 5 onwards, and it reached Orkney on June 23. These were mostly singles; but at Bradwell, south Essex, 115 were trapped on June 4 and 5 and 158 in the whole month. These were followed there by 188 in July, and the year's total was over 2100 in two traps; in addition 158 were counted on the sea-wall on October 25. Elsewhere, numbers remained very low until late September and October, when there were large influxes patchily along the coasts: Beetham, Westmorland, 80 September 26/30; Seaford, east Sussex, September 26, c.100 on one clump of valerian; Prestatyn, Flint, 300/400 seen on sand dunes, Spurn, south east Yorks, 80 trapped October 10; Sandwich, east Kent, over two hundred counted on the golf course October 26. Inland, in most places there seems to have been unusual scarcity throughout the season: a score of only 90 trapped at Bramley, Surrey, with no night reaching double figures, may have been typical.

*Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 0LE.

**1 Hardcourts Close, West Wickham, Kent BR4 9LG.

N. noctuella played a respectable part in the April invasion but was extremely scarce later, though fairly widely reported in two dozen localities, the most northerly being one at Dunstaffnage, Argyll on October 16; but at no time were more than one or two seen on one night. The last was at Hayling Island, November 15. *Udea ferrugalis* was noted only at Trebrowbridge, east Cornwall, singles on August 27, September 19, October 11; and the last at Walberton, west Sussex on November 29 & 30, December 1 and two December 3, and at Axbridge, South Devon, December 16 and 17. Of the diurnal *M. stellatarum* one was seen, probably hibernated, at Penzance, west Cornwall, February 24; there were three during April, but after that only nine in July, five in August, five in September, four in October, and the last at Brighton, east Sussex on November 30. All of these were seen singly, in every vice county along the south coast, in Lincolnshire and south east Yorkshire on the east, in Westmorland in the north west, in co. Cork in south west Ireland, and one on Alderney. Of *Peridroma saucia* one was trapped at Peacehaven, east Sussex on June 5, another in north London on June 26, and one at Sandwich B.O. on July 15. No more were noted until small invasions between September 17 and mid October gave records of about 20 scattered along the south coast to east Sussex, two in north Somerset, and in Glamorgan. Most regular recorders reported the species as "not seen". *A. ipsilon* after fair numbers during the April immigration was much below average in later months. It was almost unrecorded in May, rarely in June, in some numbers in July, but mostly in late September and in October, with the last records at Hampstead, Middlesex on November 1 and at Trebrowbridge, east Cornwall on December 5, but nowhere in large numbers. Most of the records were from counties south of the Thames, but it was noted in Bucks., and there was a single record in Orkney on October 1st.

Phlogophora meticulosa was fairly numerous from May onwards, but this appears to have been mainly due to native breeding until October, when there were traces of migratory swarms near the coast in Hants. and Sussex, and one was noted in Orkney. *Plutella xylostella*, which may also be resident as well as immigrant, was noted in small numbers as occasional in a dozen places, the first at Trebrowbridge, east Cornwall on February 2 and the last at Hayling Island, south Hants on November 15, but there were no indications of any large influxes.

Full details of the scarcer species are set out in Annexe II and need little special comment. The only immigrations after April was that of *R. sacraria*, of which over 200 were reported. Two fore-runners were seen at Sandwich, east Kent on July 6 and 7, and there were two in south Wiltshire on August 17 and 21; but the main influx began about September 18 and records somewhere continued almost daily until October 18. Arrivals fell into three phases. The

first, in a long period of anti-cyclonic conditions with southerly winds, brought relatively small numbers scattered patchily along the south coast from the Isles of Scilly to east Kent, reaching also to south Essex. Almost all of these were of a very small, pale and brown striped form. On September 30 conditions changed suddenly to broken weather with strong south west gales and mainly cloudy nights with high temperatures. These lasted until October 6, though some arrivals continued in the south, they brought very large numbers up the Irish sea to the out-jutting area of Westmorland/Furness, whence some seem to have crossed the land almost to the east in co. Durham, Berwickshire and Mid Lothian. On October 1st, 27 were caught in a single trap at Arnside and 21 in three other places. This phase was interrupted by three days of north west winds, but it was resumed from October 11 onwards in similar wind conditions and with a similar distribution of the records. The last was of a very worn female caught in co. Kerry on October 26.

The number of recorders has increased considerably in 1985. We are grateful to all of them, and especially to those who responded to our appeal for full information about the unusual April immigration and so helped us to give the detailed account of it in this paper.

ANNEXE I

Names of direct recorders

Names of recorders who have sent their records to us directly are listed below. Many of them have included also records obtained from other observers, to whom we are grateful. It is not practicable to list all their names, but some of them appear in Annexe II.

Aldridge, J. D., Alexander, K. N., Allison, A., Archer-Lock, A., Atkinson, R. S., Baldock, A. J., Baker, B. R., B.B.C. Natural History Unit., Batchelor, D. M., Bascombe, K. N., Bond, K. G. M., Bradford, E. S., Bretherton, M. F., Bretherton, R. F., Briggs, J., Brooks, Miss., Brotheridge, D. J., Brown, D. C. G., Brown, P. W., Bryan, M. D., Campbell, D. J. L., Cain, M., Chalmers-Hunt, J. M., Collins, C. B., Collins, G. A., Costen, Dr. P. D. M., Craik, Dr. J. C. A., Cribb, P. W., Dacie, Sir John, Davey, P. A., Dewick, A. J., Dewick, S., Dey, D., Duff, A. G., Eastwick-Field, G. C., Emmet, A. M., Emott, E. E., Evans, K. G. W., Fairclough, R., Feltwell, Dr. D. J., Firmin, J., Foley, M. J. Y., Foster, A. J., Gardner, A., Gardiner, B. O. C., Green, J. E., Greenwood, J. A. C., Griffiths, R., Halstead, A. J., Hall, David, Hall, N. M., Halsey, J., Hancock, E. F., Hart, C., Haynes, R. F., Henwood, Dr. B., Higgs, G. E., Hogg, Peter, Humphreys, Lt. Col. R. B., Jackson, S. M., Jewess, P. J., Knill-Jones, S. A., Kydd, D. W., Langmaid, J. R., Lear, N., Long, Dr. A., Lorimer, R. I.,

Lowe, R. T., MacNulty, Dr. B. J., Madge, S. C., Marren, P., Miller, J. R., Mitchell, B. R., Minnion, W. E., Moore, B. W., Myers, Dr. A. A., Parker, Sqn. Ldr. R., Parsons, M., Payne, J. H., Peet, Dr. T. N. D., Pelham-Clinton, E. C., Penhallurick, R. D., Phillips, John, Philp, E. C., Philpott, V. W., Phelps, H. G., Pickles, A. J., Pilcher, R. E. M., Plant, C. W., Pittis, Rev. S. C., Porter, J., Pratt, C. R., Randall, C. J., Radford, J. T., Reser, (Rezbanyai), Dr. L., Rigden, S., Rutherford, C. I., Sankey, John, Sandwich Bay Bird Observatory, Sattler, Dr. K., Silver, P. G., Skinner, B., Slade, B. E., Smith, E. G. & H. H., Smith, Dr. F. H. N., Softly, R. A., Sokoloff, P. A., Spalding, A., Spence, B. R., Stallwood, B. R., Sterling, Col. D. H., Sterling, M. H., Sterling, P. H., Sutton, Dr. S. L., Swanson, S., Taffs, H., Thompson, Mrs. S., Terry, M. G. W., Townsend, M., Tremewan, M. A., Tucker, Victor, Tweedie, M. F. W., Youden, G. H., Walters, J. M., Waring, P. M., Webb, Dr. D. N. R., West, B. K., *Wild, E. H., Wilson, D. E., Woodman, A. J.

*Although E. H. Wild's choice captures were taken in V.C.11, he records them in *Ent. Record* from the politically designated county of Dorset.

(to be concluded)

Notes and Observations

SUSPECTED SECOND BROOD OF *EUPITHECIA LARICIATA* FREYER (LARCH PUG) — *Eupithecia lariciata* is usually regarded as being univoltine, flying in May and June (Skinner, 1984 *Colour Identification Guide to the Moths of the British Isles*). However, two females were caught in the Rothamsted Insect Survey light trap at Brodick, Isle of Arran, (Site No. 446, O. S. ref. NS 014 380) on 2.viii and 22.viii.1985. Their identity was confirmed by examination of the genitalia.

Our records revealed several other late capture of this species: 30.vii.85 (Aberystwyth, Site No. 340, O.S. ref. SN 629 837) and 6-viii- and 11.viii.1984 (Yarner Wood, Site No. 266, O.S. ref. SX 786 788), and collectively, our traps have caught *lariciata* during every month from May to August inclusive. (First date of capture 21.v.1981 at Yarner Wood and last date of capture 22.viii.1985 at Brodick).

When considering several years' records at only one site two separate broods are easier to distinguish. During the years 1981 to 1984 at Yarner Wood there appear to be two distinct flight periods, one during May and June (11 individuals captured) peaking at the beginning of June, and another during August (two individuals in 1984 only). This suggests the occurrence of a partial second brood in some years when conditions are favourable.

The larvae of *lariciata* feed on the needles of Larch (*Larix europaea*) and, although it is not regarded as a serious forest pest, the possibility of two broods in favourable years may be of interest to horticulturalists as well as entomologists.

Our thanks to Mr. D. Rogers, Mr. M. Leggett and Mr. D. Warner for operating the traps at Yarnier Wood, Aberystwyth and Brodick respectively and to Mr. I. J. L. Tillotson, the identifier for Aberystwyth and Brodick, for his co-operation in forwarding the *Eupithecias* to myself. ADRIAN M. RILEY, Entomology Department Rothamsted Experimental Station, Harpenden, Hertfordshire.

MORE WINTER ACTIVITY — Further to my previous note on this subject (*Ent. Rec.* 90: 115) — incidentally the word "final" was omitted from the end of the first line — I can report a similar occurrence.

Whilst picking brussel sprouts for dinner on Christmas morning 1985, I noticed a number of final instar larvae of *Pieris brassicae* among the leaves in the "head" of the plant. On January 8th, 1986 my four year old son proudly showed me a *brassicae* pupa which he had just spotted on the window of our conservatory. The distance from the sprout plants to the pupation site is roughly 5 metres and as the windows are regularly cleaned, the larva must have made the journey and pupated during a spell of very cold weather. The BBC weather forecast predicted temperatures in the area of as low as -12C and certainly the temperature barely rose above freezing even during the day time for at least ten days before pupation.

Although I tend to regard such activity in nature during hard winters to be unusual, my previous note solicited no comment from lepidopterists — perhaps these winter time observations are not so unusual after all? — J. COOTER, 222 Whittern Way, Hereford, HR1 1QP.

COPPER UNDERWINGS IN YORKSHIRE: AMPHIPYRA PYRAMIDEA L. AND A. BERBERA SSP. SVENSSONI FLETCH. — Between August 20-28, 1985, I stayed in Todmorden (SD9324) West Yorkshire at Todmorden Edge South overlooking Centre Vale Park and Buckley Wood in the valley of the R. Calder. On Wednesday evening Aug 21 we returned to the Guest House a little after 10 pm. Outside the porch door was an electric light round which a moth was fluttering. I made a grab but missed it and thinking it might have settled in the shade I looked down and saw a moth sitting on the wall with its wings arched over its back. I took it in my hand and soon realised its wings were limp so that it must recently have emerged and could not have been the same I had seen fluttering round the lamp. Moreover it was a copper underwing, a species I had never met or heard of in Todmorden where I lived and collected as a boy in the 1920-40 period.

Later this year Dr. David A. Sheppard of the Nature Conservancy visited me at Berwick and offered to do a genitalia examination of the moth and confirmed its identity as a male *A. pyramidea*.

By a curious coincidence I was in Wooler, Northumberland on Sept. 1, 1985 where I visited Miss Grace A. Elliot at Padgepool House. She showed me a set specimen of a copper underwing reared in August from a larva found devouring a hybrid tea-rose in Castle Howard gardens (SE7170) near Malton, NE. of York during the first week of June. Judging by the underside wing markings depicted in *Moths and Butterflies of Great Britain and Ireland*, **10**, p.154, fig. 6 and 7, I considered the specimen to be *A. berbera* ssp. *svenssoni*. This was confirmed by Mr. E. C. Pelham-Clinton on a visit to the Royal Scottish Museum, Edinburgh.

Porritt had 5 place records for *A. pyramidea* in Yorkshire and the more recent list in *The Naturalist* 1967-70 added four more one of which is Triangle nr. Halifax only 12 miles from Todmorden. Is the copper underwing extending its range northward or has it been overlooked? — ALBERT G. LONG, D. Sc., LL.D., F.R.S.E. 33, Windsor Crescent, Berwick-upon-Tweed.

A SECOND RECORD OF THE BROWN-TAIL MOTH: *EUPROCTIS CHRYSORRHOEA* (L.) IN NORTH HAMPSHIRE — A single male of *Euproctis chrysorrhoea*, a species usually only found in close proximity to the coast, was caught in the Rothamsted light trap at Alice Holt Lodge, Hampshire on the night of 25th — 26th July, 1985. There is one previous record of *E. chrysorrhoea* from north Hampshire (V.C. 12) on 8th August, 1954 (Goater, 1974, *The Butterflies & Moths of Hampshire and the Isle of Wight*).

Large populations of *E. chrysorrhoea* are present on the Hampshire coast in the Portsmouth area, especially Farlington Marshes, about 40km south of the light trap at Alice Holt Lodge. Meteorological records supplied by the Royal Aircraft Establishment, Farnborough (13 km NNE of Alice Holt) show that surface winds on 24th-25th July were ESE and light, but increased to moderate SE (10-15 knots) on 25th July and had veered to SW by 26th July. It thus seems very probable that this moth originated from the epidemic population in south Hampshire — T. G. WINTER, Forestry Commission, Alice Holt Lodge, Farnham. Surrey.

PROBABLE RECORDS OF THE SCARCE FOOTMAN *EILEMA COMPLANA* (L.) FROM SOUTH-WEST SCOTLAND. — Whilst on holiday in south-west Scotland last year, a distinctive footman larva was found feeding on lichens on rocks near the sea, at several sites. The larvae died during rearing but Mr. D. Carter of the British Museum (Natural History) has compared a freeze-dried specimen and a photograph with the national blown larva collection and believes they are the scarce footman.

The species is recorded from the east side of the Isle of Man in Heath *et al* 1979 *Moths and Butterflies of Great Britain and Ireland* Vol. 9 and records from the south west of Scotland would not seem to be a remarkable extension of its known range.

The records are as follows, all made between 23.6 and 5.7.1985.
Barness, Borge, Kirkcudbrightshire, grid ref. 25/633455;
Ravenshall Point, Gatehouse, Kirkcudbrightshire, g.r. 25/525523;
Portpatrick railway cutting, Wigtownshire, g.r. 25/002536;
Port Kale, Port Patrick, Wigtownshire, g.r. 15/991552.

We are naturally very grateful to Mr. Carter for his help. B. and I. D. WALLACE, Merseyside County Museums, Liverpool.

FIRST RECORD OF THE TRIANGLE: *HETEROGENEA ASELLA* (D. & S.) IN NORTH HAMPSHIRE — A single specimen of the very local *Heterogenea asella* was caught in the Rothamsted light trap at Alice Holt Lodge, Hampshire on the night of 25th — 26th July, 1985. This appears to be the first record of this species in north Hampshire (V.C.12) although it is quite well known from oak woods in the south of the county (V.C.11) particularly in the New Forest (Goater, 1974, *The Butterflies & Moths of Hampshire and the Isle of Wight*). T.G. WINTER, Forestry Commission, Alice Holt Lodge, Farnham Surrey.

BOOK TALK EIGHT. — “Books are men’s hearts in other men’s hands”, is a saying reserved for the truly dedicated works of authors, though regrettably it seems that such books are not always fully appreciated. For instance, I have never felt that J. W. Tutt’s masterpiece *A Natural History of the British Lepidoptera* (1899-1914. Volumes 1-5 and 8-11 were all that were published) received due recognition, despite having been written for the discerning entomologist and being essentially a labour of love. For the immense amount of detailed information it contains on practically every aspect of most species treated, Tutt’s *magnum opus* is unsurpassed notwithstanding its age, and furthermore is likely to remain so for sometime yet.

The descriptive brochure by the publishers of H. J. Henriksen’s and I. B. Kreutzer’s *The Butterflies of Scandinavia in Nature* (reviewed in *Ent. Rec.*, 95: 171-172), mentions a bilingual issue (in Danish and English). However, before printing, the publishers changed their minds and produced instead two separate issues, one in Danish, comprising 1500 copies, and another of 2500 copies in English. Incidentally, why has the price of this book when new varied so enormously — from as much as £50 a copy to half that, or even less? The book was not remaindered to my knowledge.

I have heard it stated, paradoxically, that a bad review of a book may increase its sales. One wonders on that basis whether the three titles below sold out. Thus, of *A Dictionary of Entomology* (1976), by A. W. Leftwich, one reviewer wrote: "On no account buy this book. Written evidently by a non-entomologist, it is out of date in its nomenclature and system of identification and is riddled through and through with inaccuracy. Most of what you have a right to expect in a dictionary of entomology is absent". Dr. Kettlewell said of the photographs in L. Hugh Newman's *British Moths and Their Haunts* (1950): "The foreword, by Mr. Peter Scott, states that each moth is shown 'opposite to the type of country in which it lives.' Surely this should read 'in country opposite to the type in which it (normally) lives'! There might then be fewer corrections!" And another reviewer uttered these comments on C. B. Antram's *The Collecting and Preservation of Butterflies and Moths* (1951): "This farrago of inaccurate information, bad advice and worse grammar should never have been published".

There are relatively few books on lepidopterous eggs, but at the A.E.S. show on October 12th last I picked up for £1, an attractive little publication entitled *Some Moths and Butterflies and Their Eggs* (1907), with 60 photographs from nature by A. E. Tonge, F. E. S., an acknowledged authority on the subject. This is no.15 of a series called "Gowans's Nature Books", published by Gowans & Gray. According to an advertisement, up to that time the only other on entomology in the series was no.4: *Butterflies and Moths at Home* (1905), with 60 photographs from nature by A. Forrester, many of larvae. This I also possess but it is less interesting. — J.M. CHALMERS-HUNT.

SCYDMAENUS RUFUS MÜLL. & KUNZE (COL.): AN ECOLOGICAL NOTE. — My friend Prof. J. A. Owen, in his interesting note on this usually rare beetle (*antea*: 78-9) draws attention to its two types of habitat and suggests that, that of manure heaps, etc., may have been relatively lately acquired, compared with the better-known one (rotten wood and under bark) — on the basis of lack of early records from the former type. I would agree that this is probably the case, but on the other hand it cannot be a really recent phenomenon because as long ago as 1906 (*Ent. mon. Mag.* **42**: 138) E. A. Butler, who had taken the second British specimen in 1882, discovered a colony of the beetle in a manure heap at Hendon, Middlesex — remarking that the habitat was 'somewhat unusual'. As he further mentions, H. Donisthorpe had found the species in moderate numbers in woodstack refuse near Shirley, Surrey (1894, *Ibid.* **30**: 136), where also 'a fine series' was procured on a later occasion (p.276). This last biotope is of interest in forming a sort of connecting-link between the other two. I have met with *S. rufus*

only in rotten beech at Mickleham, Surrey, in 1933-4 (a small colony), and very sporadically under bark of oak, beech, and (once) elm in the Windsor Forest area. — A. A. ALLEN.

TINEOLA BISSELLIELLA (HUM.) (THE COMMON CLOTHES MOTH) IN NOTTINGHAMSHIRE: Old records suggest that this pest species was not uncommon in the East Midlands. Carr (*The Invertebrate Fauna of Nottinghamshire* 1916) gives several localities. Hayward recorded it from Repton in Derbyshire as sometimes common in houses 1916-19 (Hume : *The Lepidoptera of Derbyshire* (1962) unpublished manuscript) and there are old records from Leicestershire and south Yorkshire. However, there are remarkably few post-1920 records. The only ones I can find for these four counties are: Clay Cross, Derbys. 3 specimens between 1958 and 1959 (Hulme *op. cit.*) and Melton Mowbray, Leics., an infestation in a textile manufacturing plant, 1982, confirmed by the late Don Hall-Smith (Anona Finch *pers. comm.*). I was therefore most pleased when a fellow member of the Common Room complained that his flat was infested with moths and subsequently brought to the breakfast table an example of this species. A thorough search of the flat produced a total of 14 specimens, several freshly emerged, although we were unable to find signs of larvae. The two most likely theses on the origin of this infestation are either that my colleague spends a significant amount of time working in the roof of Lincoln Cathedral, which may provide a good "wild" habitat for the species, or that the University is inhabited by a large transient population of students and conference delegates, some of whom are of most unsavoury habit and may themselves be infested. MARK STERLING, Cripps Hall Senior Common Room, University Park, Nottingham.

EUZOPHERA BIGELLA (ZELL.) AND EUCHROMIUS OCELLEA (HAW.) (LEP.: PYRALIDAE) IN YORKSHIRE. — Towards the end of 1985 Richard Beaumont passed on to me a considerable number of 'microlepidoptera' for identification which he had taken in the Huddersfield area during that year. Included were two species which, besides providing the first Yorkshire records, are of more general interest. A specimen of *Euzophera bigella* (Zell.) was reared on 16th August from one of three larvae feeding in a peach purchased in Huddersfield town centre. There had been no external sign of the larvae which were feeding near the kernel. On 16th October a male *Euchromius ocellea* (Haw.) was taken in an m.v. light trap at Richard's home at Netherton, Huddersfield. H. E. BEAUMONT, 7 Brampton Road, West Melton, Rotherham, South Yorks., S63 6AN.

HYPENA CRASSALIS FABRICIUS (LEP.: NOCTUIDAE), THE BEAUTIFUL SNOUT, IN HERTFORDSHIRE — A single female of *H. crassalis* was caught in one of the Rothamsted Insect Survey light traps operating in Harpenden (Site No. 22, Geescroft 1, O.S. Grid Ref. TL 132 128) on the night of 13/14-vii-1985. So far as I am aware this species has not previously been recorded in Hertfordshire. The normal larval foodplant (bilberry) is not present in the area, therefore this individual is probably a migrant. The nearest known colony is approximately 29 km distant at Aspley Heath in Bedfordshire (Grid ref. TL 925 352). ADRIAN M. RILEY, Department of Entomology, Rothamsted Experimental Station, Harpenden, Hertfordshire.

Current Literature

The Spiders of Great Britain and Ireland by **Michael J. Roberts.**

Volume 1, Atypidae to Theridiosomatidae, 4to., 229pp., 8 col. illu. and numerous line drawings. **Volume 3, all families**, 4to., 237 col. plates. Harley Books, Martins, Great Horkeley, Colchester, Essex, 1985. Vol. 1, £45. Vol. 3, £55. Vols. 1 & 2 together, £85.

Although there are several modern standard works on British spiders, notably those by Locket, Millidge & Merrett (1951-53, 1974), Bristow (1958) and Jones (1983), identification is still somewhat of a problem, and in the words of the author of the book under review, "the present work is an attempt to make identification of British spiders a little easier". The outstanding feature of these two volumes, is the exceptional quality of the coloured illustrations, which may even excell the, until now, incomparable plates in Blackwell's classic, *A. History of the Spiders of Great Britain and Ireland* (2 vols., Ray Society, 1861-64). A remarkable fact moreover, is that all the coloured illustrations in Dr. Roberts' book as well as the many hundreds of fine line drawings, were executed by the author himself.

Volume 1 is portioned into four sections. Section 1 (pp. 15-30) consists of an introduction which includes chapters on the external morphology of spiders; courtship, mating and growth; spider bites and poison; spider communication; collection of spiders; silk; preservation and examination of spiders; occurrence and distribution of British spiders; and finally, a bibliography of 72 items. Section 2 (pp. 31-34) concerns classification and nomenclature and has 13 line drawings. Section 3 (pp. 35-44) is a key to the families of spiders, and is illustrated by 70 line drawings. Then follows the main part, Section 4 (pp.45-224), which deals with all families

except the Lynxyhiidae (which we understand will be covered in Volume 2) and describes all the species in the families Atypidae to Theridiosomatidae. These descriptions are accompanied by some 750 line drawings of mainly the epigynes and palps (all much enlarged), and a further eight figures of these in colour. There are keys to the various genera, but no keys to species. With each species treated the emphasis is on distinguishing characters, and generally speaking, information on their distribution, habits and biotope tends to be brief and sketchy. The main text is printed in double column. A serious criticism is of the great extent of wasted space, which frequently amounts to as much as half a page or even more. The volume concludes with a useful general index.

Volume 3. Apart from a preface, index and a few preliminary pages, this volume consists entirely of a magnificent set of coloured plates. These show the spiders greatly enlarged (up to 50X natural size), with in most instances a single specimen occupying a whole page. In order to indicate the overall size of a species, each figure of a specimen is accompanied below by a life size line drawing of the spider.

This highly authoritative and beautiful work will be welcomed by all students in the field of British arachnology who need to determine accurately their material. Paper and printing are of a high order, and each volume is contained in an attractive and serviceable hard cover with gilt lettering. J.M.C.H.

AES Pamphlet No. 12. Some British Moths Reviewed by W. H. T. Tams. and Guide to the Critical Species by J. Heath, R. Cooke, M. J. Skelton and J. Reid. Amateur Entomologist's Society 1985. Price £2.80.

The first part of this Golden Jubilee Publication, pages 1-28, is a facsimile reprint of a paper by Timothy Tams which appeared in *The Journal of the Amateur Entomologist's Society*, vol. 5, 1941 which describes the diagnostic features including the genitalia, which separate a number of similar species of macrolepidoptera especially topical at the time of publication. There are 67 line drawings of genitalia and four black and white plates, mostly of adult specimens. It is a pity that the reproduction of these photographic plates leaves a lot to be desired, but it is a small criticism of a paper which has become a 'mini classic' and now very difficult to obtain in its original printing.

The second section, pages 29-62 is a collation of the Lepidoptera Distribution Maps Scheme — Guide to the Critical Species originally published in the *Entomologist's Gazette* between 1969 and 1972. As in the first part these papers describe and illustrate the genitalic and external features which aid the identification of very similar and frequently confused species of macrolepidoptera. The line

drawings comprising of 44 figures of both genitalia and wing patterns have reproduced well. Although the text is a facsimile of the original parts, the key and genitalia drawings relating to *Amphipyra pyramidea* and *A. berbera* have been modified in line with modern thought.

Finally the complete work has been repaginated and a two page index covers all the species mentioned.

The compilation of these important papers in one handy volume, coupled with the give-away price makes this AES pamphlet a must for all serious students of the British Lepidoptera. — BERNARD SKINNER.

British Pyralid moths — a guide to their identification by Barry Goater, illustrated by Geoffrey Senior and Robert Dyke. 178 pp. 9 colour plates; 12 text figures. Boards. Harley Books 1986. Price £18.95.

This work commences with a coloured frontispiece depicting 12 moths in characteristic resting pose, photographed by M. W. F. Tweedie. After a brief introduction there is a check-list of British Pyralidae, with limited synonymy; a description of family characteristics illustrated by a generalised moth and genitalia. There follows a systematic section with each species described under the headings of Imago, Larva and Distribution. There are a number of illustrations of genitalia and wing pattern. The work concludes with eight colour plates, a brief bibliography, glossary, foodplant and species index.

This eagerly awaited volume replaces Beirne's *British Pyralid and Plume moths* published 34 years ago. (Surely a co-incidence that this book describes 34 species added to the British list since Beirne?) In common with most entomologists the reviewer's first action on receiving the book was to turn to the plates — a crucial feature of any identification guide lacking dichotomous keys. Here we find life-size colour photographs of 272 moths showing colour forms and sexual dimorphism of the 208 species currently on the British list. The illustrations include a number of historic specimens as well as a good number of mouth-watering rarities. Little need be said of the quality of the plates — 'excellent' will suffice.

The text descriptions are helpful, especially when faced with less than perfect specimens for identification. The line drawings and genitalia are good, but there are far too few of them. The brief notes of the biology of each species are interesting, clearly demonstrating the gaps in our current knowledge. The distribution notes are incomplete, with a number of known County records apparently omitted. There are also one or two errors — for example the reported occurrence of *Pima boisduvaliella* in Lancashire was based on a misidentification of *Anerastia lotella* (see Michaelis : *Ent. Rec.* 69:247).

The nomenclature is temporarily up-to-date, with many new names to grapple with (although the author, of course, cannot be blamed for this!) To give an extreme example, *Scoparia centurionalis* in Beirne became *Eudonia crataegella* in Kloet & Hincks, and now appears as *Dipleurina lacustrata*!

This book is thoroughly recommended for all those interested in moths, and is a worthy companion to Skinner's *Moths of the British Isles*. Both of these works show that a combination of a good photographer and a careful publisher is the only effective way of illustrating Lepidoptera. P. A. SOKOLOFF.

Nordeuropas Pyralider (Pyralid moths of North Europe by Eivind Palm. *Danmarks Dyreliv* vol. 3 287 pp; 8 colour plates; 264 text figs. numerous maps. Boards. Fauna Boger 1986. (available from Apollo Books, Lundbyvej 36, DK 5700 Denmark). Price DKr. 400 (plus postage) — around £33.

Following a 14 page introduction covering the general structure, biology and distribution of pyralid moths, the systematic section provides a key to subfamilies, which are briefly described. Each species is dealt with under the headings of description, distribution and bionomics with a brief summary in English. Two maps accompany the description: one showing the distribution over the various Fenno-Scandinavian regions and the second giving a more detailed picture of the Danish distribution. Where appropriate, differences between closely related species are illustrated by diagrams of wings, genitalia and other relevant structures. The colour plates comprise photographs of 379 moths all with full data. A bibliography and index complete the work.

The photographs for this book were taken by David Wilson, whose skills will be well known to readers. The colour reproduction is not as crisp as it could be, but the main criticism is that none of the moths are reproduced life sized — the magnifications used varying between 0.8 and 1.8 life size. However, a number of Northern European species not (yet?) found in Britain are figured. The text, in Danish, is very difficult to follow for the "English only" reader, and the English summaries provide only limited information. The text illustrations comprise large, clear diagrams similar, but far superior to those in "Beirne". They are easy to use and are, perhaps, the most useful feature of the book.

Like others in this series, which to date have covered the hoverflies and geometrid moths, the book is well produced and, despite the limitations of a Danish text, will prove most useful to the serious student of the Lepidoptera. — P. A. SOKOLOFF.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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THERA CUPRESSATA GEYER: A SPECIES OF
GEOMETRID MOTH NEW TO THE
CHANNEL ISLANDS

By P. D. M. COSTEN, F.F.A.R.C.S.* and T. N. D. PEET, F.R.C.S.**

Two males of this species were taken at mercury vapour light on the nights of 17th and 19th October, 1985 respectively at St. Peter's, Guernsey.

Abroad *T. cupressata* is known from Southern Europe and the Mediterranean and Atlantic coasts of France. The foodplants listed by various authors are *Cupressus* and *Juniper* and the larvae are found from May until August. The adult flies in the autumn and is thought to hibernate. There is no naturally occurring *Juniper* on Guernsey but various species and cultivars of *Cupressus* are widely grown, especially *X. Cupressocyparis leylandii*. *T. cupressata* is not a known migrant and with the exception of two specimens of *Mythimna unipuncta* and one of *Mythimna loreyi* no known migrants were seen around the time of capture. The weather was mild with minimum night temperatures of 10 degrees Celsius and variable but mainly easterly winds of Force 2.

The adult moth is similar in appearance to *T. juniperata* which is not found on Guernsey, but is easily distinguished from it by the conspicuous black markings on the dorsum and the long apical streak which crosses two thirds of the forewing.

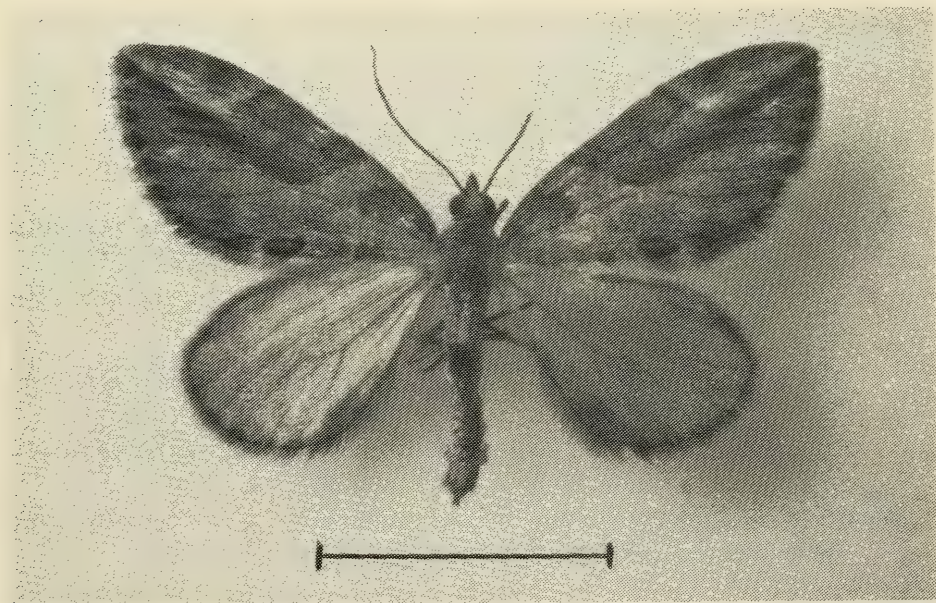


Fig. 1 *Thera cupressata* Geyer. Scale bar = 1 cm.

*La Broderie, Route de la Claire Mare, St. Peter's Guernsey.

**Le Chêne, Forest, Guernsey.

In recent years other *Cupressus* feeding moths have been recorded on Guernsey, *Eupithecia phoeniceata* was first recorded in 1959 and is now common, and *Lithophane leautieri hesperica* which was first noted in 1971 is similarly frequently seen. Whether or not Channel Island insects are British and therefore whether *T. cupressata* can now be added to the list of British moths is a matter for discussion but we noted with interest that the recent discovery of *Eupithecia ultimaria* on Guernsey was described as an addition to the British list.

Acknowledgements

We would like to thank the staff of the British Museum (Natural History) for identifying the specimens, and Mr. Barry Goater for confirming the identification and for providing help with the references. We also thank Mr. Graham Jackson for providing the photograph.

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Peet, T. N. D., In press. *Rep. Soc. guernes.* Entomology Report for 1985.
Riley, A. M., 1985. *Eupithecia ultimaria* Boisduval (Lepidoptera: Geometridae): A pug new to the British list. *Entomologist's Gaz.* 36: 259.

Note: A further two specimens of *cupressata* were taken at the same site on the nights of 10th and 11th July 1986. P.D.M.C.

DAMAGE TO BLUEBERRY (*VACCINIUM CORYMBOSUM*) BY *CACOECIMORHA PRONUBANA* (HÜBNER) — On 20th May, 1986 tortricid larvae was found on various cultivars of highbush blueberry in a plantation at East Malling Research Station, where they had caused extensive damage to young shoots, leaves and flowers. Most of the larvae were almost fully-grown and most had constructed shelters from dead flowers or leaves webbed to the shoots. Ten larvae were collected and reared through to adult; all proved to be *Cacoecimorpha pronubana* (Hubner), which is known to be polyphagous. M. A. EASTERBROOKE, East Malling Research Station, nr. Maidstone, Kent.

NOTES ON SOME CRYPTOPHAGIDAE (COLEOPTERA)
OCCURRING AT LOCH GARTEN, INVERNESS-SHIRE

By J. A. OWEN*

The pinewoods of the R.S.P.B. Loch Garten Reserve form part of Abernethy Forest — a major native pinewood area. In studying the beetles of the Reserve over the past 7 years, I have come across some members of the family Cryptophagidae which are sufficiently uncommon in Britain to justify brief notes.

Cryptophagus angustus Ganglbauer. A specimen was beaten from a withered pine branch lying on the ground in July 1985.

This species was added to the British list by Messrs. Coombes and G. Woodroffe (1955 *Trans. R. Ent. Soc. Lond.* **106**, 237) who found, in their extensive study of the genus, that all the British specimens they could examine labelled *cylindrus* Kiesw. were, in fact, *angustus*. This beetle is associated with coniferous trees and, in Britain, is widespread though uncommon.

Cryptophagus badius Sturm. This species has turned up more frequently on the Reserve than any other member of the genus. About 30 specimens have been found in various situations. Most have occurred in disused red squirrels' dreys and in old nests of various birds (e.g. osprey, owl, carrion crow). Others have been caught in a Malaise trap set among old pines and in funnels set out to monitor the fall of pine seed.

Messrs. Coombes and Woodroffe (*l.c.*) reported that the only authentic British examples of the species which they could detect were taken by the late Mr. P. Harwood from a squirrel's drey at Aviemore. There are, however, specimens in the Harwood collection taken at various other sites on Speyside between 1924 and 1942. (see Welch, R. C. 1979 *Entomologist's mon. Mag.* **115**, 240). My friend Mr. A. A. Allen has in his collection two specimens taken by Mr. Harwood labelled respectively "Boat of Garten 7.ix.24? squirrel's drey" and "Nethy Bridge 24.viii.30" and one taken by Dr. A. M. Easton from a drey in Rothiemurchus Forest on 27.ix.68. It is possible that the first of these came from the Reserve which is less than 1 km from Boat of Garten at the nearest point. The beetle was found in 1966 in a sparrowhawk's nest at Polchar which is about 3km from Aviemore (Welch, *l.c.*). Thus all the authenticated British records of this species have been for a few sq. km.

Cryptophagus lapponicus Gyllenhal. Seven specimens were found in a forsaken squirrel's drey in a Scot's pine together with specimens of *C. badius* and *C. scanicus* L. The nest contained a mummified half grown squirrel with which some of the beetles were

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closely associated. A further two specimens occurred in each of two other dreys collected in September 1985.

The first authentic records of this species in Britain were reported by Messrs. Coombes and Woodroffe (*l.c.*) who found specimens taken at Aviemore in the Champion and Harwood collections, mostly from squirrels' dreys. Mr. Allen has 4 examples taken by Mr. Harwood, 3 labelled "Boat of Garten 1.ix.34" and one from Aviemore. It was also found in a sparrowhawk's nest at Polchar in 1966 (Welch *l.c.*). Thus, as with *C. badius*, all authenticated records of this species in Britain have occurred within a few sq. km.

Cryptophagus subdepressus Gyllenhal. About a dozen specimens were beaten from the lower branches of old spruce trees in October 1984 and one was caught in a Malaise trap set among old pines.

The species was recorded from Loch Garten and elsewhere on Speyside in 1910 by Hudson Beare (*Entomologist's Mon. Mag.* **44**, 272), a year after its presence in Britain was first noted (Joy, N. H. 1907 *Entomologist's mon. Mag.* **43**, 225).

Most of the records for this species in Britain (e.g. Champion, G. C. 1908 *Entomologist's mon. Mag.* **43**, 250) have mentioned an association with spruce which is a tree re-introduced to Britain relatively recently. Dr. Joy (*l.c.*) recorded that he obtained his first specimens from "young fir trees" though he later (Joy, N. H. 1907 *Entomologist's mon. Mag.* **43**, 275) reported finding examples on "Scotch fir". Hudson-Beare reported that he was quite unable to find the species on "Scotch fir" (which he distinguishes from "spruce fir") and I have beaten innumerable branches of Scots pine on the Reserve without finding it. It could be that the beetle does not occur in areas where there is only Scots pine and only became established in Britain after spruce was introduced. Alternatively, it may survive in forests which are exclusively of Scots pine but still prefer spruce when it is available.

Henoticus serratus (Gyll.) An example of this beetle was attracted to some fermenting fruit residues set out among old pine trees (*Pinus sylvestris* L.) as a trap for beetles in late summer 1983.

Though it is widely distributed in Britain the species is generally rare, especially in Scotland. There are old records for Rannoch (Fowler, W. W. 1889 *Coleoptera of the British Isles* Vol. 3), Aviemore (Champion, G. C. 1887-8 *Entomologist's Mon. Mag.* **14**, 93) and Arrochar (Bagnall, R. S. 1907 *Entomologist's mon. Mag.* **43**, 234). There is a more recent unpublished record (Welch, R. C. pers. comm.) for Rothiemurchus Forest.

This species is usually found under bark or at blossom. At Loch Garten 35 beetle species have occurred at fermenting fruit traps, of which most, e.g. *Epuraea* spp, *Rhizophagus* spp., are usually found in sappy conditions under bark.

Caenoscellis ferruginea (Sahl.). An example appeared in a

heap of fungi set up to attract beetles in an old pinewood area in July 1979.

This species is widely distributed in Britain but there are few records for Scotland.

Atomaria (Anchicera) contaminata Erichson. Extensive pit-fall trapping in various parts of the Reserve produced a specimen from an area among old pines. About a dozen other examples were found in the summer of 1985 in the same and in another part of the Reserve by careful examination of debris (mostly mouldy pine needles) beneath withered pine branches which had been lying on the ground for about 2 years.

The existence of this species in Britain was first detected by Mr. C. Johnson (1975 *Entomologist's mon. Mag.* **111**, 177) who recognised as such an example taken Dr. R. A. Crowson near Stirling in 1966. I have not found any other British records.

Atomaria bella Reitter. Nine specimens of this species have been taken. Four occurred in the same habitat as *A. contaminata* and the remainder were caught at various times in a Malaise trap set among old pines.

The presence of this species in Britain was first detected by Mr. C. Johnson (1967 *Entomologist* **100**, 39) who identified as such a specimen taken by Mr. A. A. Allen in July 1938 under larch bark at Grantown-on-Spey and two other specimens taken by Mr. P. Harwood at Aviemore in September 1942. There are two specimens in the British Museum (Natural History) from the Sharp collection — one labelled "Forres 24.vi.1910" and the other without data.

Atomaria pulchra Erichson. About 20 examples of this species were caught at various time in a Malaise trap set among old pines.

This is the species known earlier in Britain (erroneously) as *affinis*, *badia* or *prolixa*. Unlike the other *Atomaria* species dealt with it is widely distributed though uncommon and is associated with deciduous and coniferous trees (see Johnson, C. 1967 *l.c.*).

Atomaria sahlbergi Sjöberg. A specimen of this species was found in July 1978 under loose bark of a standing dead pine tree and four other examples were caught in May 1984 in a Malaise trap set among old pines.

This is another species whose presence in Britain was established by Mr. C. Johnson (1967 *l.c.*), on the basis of 3 specimens collected by Mr. P. Harwood in Aviemore in 1934 (1) and 1942 (2). Two of the three specimens were found in wasps' nests but examination of this habitat on the Reserve has failed to produce the species. There are two specimens in the British Museum (Natural History) — one from the Sharp collection labelled "Nethy Bridge July 1903" and the other collected by Champion labelled "Aviemore" without date.

Other species of Cryptophagidae which I have found at Loch

Garten but which do not warrant special comment are:— *Cryptophagus dentatus* (Herbst); *C. distinguendus* Sturm; *C. pubescens* Sturm; *C. scanicus* (L.); *C. scutellatus* Newm.; *C. setulosus* Sturm; *Antherophagus nigricornis* (F.); *A. pallens* (L.); *Atomaria* (*Anchicera*) *apicalis* Erichson; *A. atricapilla* Stephens; *A. berolinensis* Kraatz; *A. fuscipes* (Gyll.); *A. lewisi* Reitier; *A. nitidula* (Marsh.) and *A. ruficornis* Marsh.

Acknowledgements

I am most grateful to Mr. Stewart Taylor, Warden of the Reserve for continuing help in carrying out the survey especially in tending the Malaise trap and in collecting some of the squirrels' dreys. Mr. I. S. Carter, Mr. A. N. Foster and Dr. D. B. Shirt also helped in collecting dreys. I thank Mr. Colin Johnson, Manchester for help in identifying some of the beetles and for suggesting how I might look (successfully) for further examples of *A. contaminata*, Mr. A. A. Allen for confirming the identification of an example of *C. badius* and for helpful comments on the manuscript and Mr. P. M. Hammond for allowing me to record data from material in the British Museum (Natural History).

Note added at proof stage: in a recent paper (Johnson, C., 1986, New synonymy and changes in the nomenclature of European Cryptophagidae (Coleoptera) *Entomologist's Gaz.* **37**: 129-132) the following changes are made: *Atomaria badia* Erichson (= *sahlbergi* Sjöberg) and *Atomaria ornata* Heer (= *contaminata* Erichson).

A FEW LATE DATES FOR COLEOPTERA IN 1985. — Single specimens of the following beetles were noted last year in or about the woods at Shooters Hill, S. E. London, on dates quite exceptionally late for the species concerned:— *Ischnoglossa prolixa* Grav. (a spring and early summer species), swept 18.viii; *Agriotes pallidulus* Ill., ditto; *Malthinus flaveolus* Hbst., ditto; *Cryptocephalus pusillus* F., off oak 9.ix; *Anaspis lurida* Steph., males 19.viii, 9.ix, 30.ix. — the last date especially remarkable in extending the adult span of the species to fully four months, otherwise unexampled in an *Anaspis*. The season was peculiar in some respects, but even a retarded beginning would scarcely account for cases such as the above. One may be added from 1984, when as late as 11th November a *Curculio glandium* Marsh. was seen slowly ascending an oak trunk; the weather at the time was mild and a number of insects still active. — A. A. ALLEN.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1985

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

(concluded from p.207)

ANNEX II

Records of scarcer immigrant species in 1985

Suspected immigrants of resident species are marked*. Unless otherwise indicated single examples are referred to. For nocturnal species dates are as far as possible of the beginning of the night and are of insects seen in traps or otherwise at light in the field. Names of recorders are abbreviated to their initials, except where there are the same; names of these and indirect recorders appear in full.

Euchromius ocella Haw. (9). CORNWALL E. Trüssel Bridge, 10.10, male (AS). DEVON S. Axminster, 12.10 (ECP-C). DORSET. Portland, 21.9 (NMH). HANTS ISLE OF WIGHT. Freshwater, 23.9. (SAK-J). HANTS S. Morestead, 12.10 (PHS); Winchester, 4.4 (J. Wild per PHS); Southsea, 6.10 (JRL). KENT E. Dungeness, 5.10, two (DEW).

***Evergestis extimalis Scop.** (1) HANTS S. Hayling Island, 21.8. First in ten years (JMW). Resident mainly in Breck district of Norfolk, Suffolk and in Kent.

***Sitachroa palealis D. & S.** (2) HANTS S. Winchester, 14.8, at window (DHS). HANTS S. Tey Down, 17.8, disturbed by day (PHS). Immigrant or temporarily established.

Antigastra catalaunalis Dup. (1) SUSSEX W. Walberton, 2.10 (JTR det. JMC-H). Apparently only the eleventh confirmed British record. Semi-tropical, but recorded in SW France.

Diasemiopsis ramburialis Dup. (1) DEVON S. Axminster, 8.10 (ECP-C).

Palpita unionalis Hubn. (4) CORNWALL W. Cadgwith, 12.10 (KGWE). CORNWALL E. Trebrowbridge, 9.10; Trussel Bridge, 10.10, female (AS). GUERNSEY 28.8, 20.9 (TDNP).

***Papilio machaon L.** (1) GUERNSEY, 6.9. Fourth island record (J. Medland per TDNP).

***Gonepteryx rhamni L.** (c. 5) GUERNSEY, April, several seen. ALDERNEY, 3.8, male and female seen (GEH). Probably immigrant, in absence of known foodplants.

***Pieris brassicae L.** (many) HANTS S. Highcliffe, 6.9, many seen flying in from sea (EHW); CAITHNESS Wick, June, a small arrival (SS). ORKNEY, 31.5, large influx (RIL). KENT E. Sandwich B.O.,

*Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 0LE.

**1 Hardcourts Close, West Wickham, Kent BR4 9LG.

7.8, c. 150; 29.8, c.600 plus in a ten acre Kale field (DMB).

***Artogeia rapae** L. (many) KENT E. Sandwich B.O., 31.7, 120 plus flying in from sea, c. 29.8, c.500 in Kale field (DMB).

Lampides boeticus L. (2) DORSET. Portland Bill, 13.9 (M. Rogers per NMH). HANTS S. Highcliffe, 21.10, slightly worn, at ivy (EHW).

***Nymphalis polychloros** L. (7). ESSEX S. Wanstead Park, seen on bramble blossom 14.7 (Mallet per CWP); Bradwell-on-Sea, 31.5 (AJD). KENT E. Pean Hill, 20.6 (ESB & SR); Willesborough, 27.7, found indoors (J. Robbins per JMC-H). KENT W. Barming Woods, 14.4, 26.4 (C. Sampson per JMC-H). ALDERNEY 29.7 (GEH).

Nymphalis antiopa L. (6). ESSEX N. Holland on Sea, 1 seen 8.7, 10.7, 12.7 (J. Macomish per JMC-H). NOTTS. Thistly Copse, nr. Elkesley, 25.5, clearly seen and described (A. S. Boot per PWC). SURREY Tugley Wood, Durfold, 1.8, watched fluttering and described *in lit.* (R. S. Atkinson). SUSSEX E. Pycombe, July (J. Samways per CRP); Abbots Wood, 25.10 (M. Stockley per CRP). WARWICKS. Sandwell, Birmingham, late 7 or early 8, at rest (R. N. Cain *in lit.*).

Danaus plexippus L. (3). CORNWALL S. Sennen Cove, 4.10, seen with north American passerine birds (V. Stratton per VT). CORNWALL N. Park Head, Newquay, 13.10, watched "dwarfing a rock pipit in the binoculars" (A. Hathaway per PDP). Co. CORK W. Castletownberehaven, 2.10 (French, *Ent. Gaz.* 37:61). Wind directions and records of immigrant moths at the same dates suggest that these may have come from Madeira or the Canaries rather than north America.

Rhodometra sacraria L. (c. 230). BERKS. Reading 19.9 (BRB). BUCKS. Oakley Wood, 20.9 (PMW). CHESHIRE Alderley Edge, 14.10, two males (CIR). CORNWALL W. Scilly, 12/19.10, several by day and one in actinic trap (JMW). CORNWALL E. Clapperbridge 18.9; Trebrowbridge, 18.9, 24.9, 1.10, two 3.10, 10.10, two 11.10; Landulph, 7.10; Trussel Bridge, 17.10, four — 14 in all all brown striped except one pink 1.10 (AS) Shevioc 19.9., 30.9., 1.10 two (SCM). DORSET E. Cliff, Portland, 20.9 (3), 21. 9 (G. Senior per NMH). Portland Bill, 23.9 (3), 24.9 (4), 26.9 (2) (M. Rogers per NMH). Worth Matravers, 18.9, two males, 1.10, female (KNB) St. Albans Head, 29.9, two (PAD). DURHAM. Brancepath, 1.10, four, 2.10, two, 13.10, four, 15.10, four — fourteen in all, about half brown striped (RBH). ESSEX S. Bradwell-on-Sea, 20.9, two, 21.9, four, 23.9, two, 1.10 (AJN and SD). HANTS S. Hayling Island, 18.9, male, 21.9, 25.9, female, fertile ova (JMW); Sparsholt, 30.9, 11.10, 1.10, two (R. Bell per BS). HANTS N. Burghclere, 18.9, male (GCE-F); Leckford, 11.10 (DHS). KENT E. Sandwich, 6.7, 7.7 (SMJ). Dungeness, 26.9, male and female (BS). KENT W. Orpington 30.9 (PAS). MIDDLESEX. Hampstead, 20.9 (RTL). OXON. Uffington, 22.9 (Classey *Ent. Gaz.* 37:61). SOMER-

SET N. Wells, 22.9, 4.10 (AGD). SURREY. Wisley, 19.9, female, 2.10, male (AJH); Bramley, 22.9, two males brown striped; Buckland, 23.9 (CH); Leigh, 2.10 (RF). SUSSEX E. Ninfield, 19.9 (MP per CRP); Peacehaven, 19.9, 23.9, 26.9, 10.10, 17.10 (CRP); Westfield, 23.9, 25.9 (R. Hobbs per CRP); Newhaven, 25.9 (D. Astell per CRP); Laughton, 26.9 (D. Astell per CRP). SUSSEX W. Rogate, 20.9, two, 21.9, 22.9 (all brown striped), 1.10, 5.10, 11.10 (JACG); Walberton, 20.9, 24.9, 28.9, two, 1.10, 5.10, 11.10 (JTR per CRP). WESTMORLAND/FURNESS. Ulverston, 30.9, three, 1.10, five, all brown lined (EFH); Beetham, 30.9, 1.10, seven, 2.10, two, 5.10, two, 11.10, 13.10. seven, 15.10, five, 16.10 — 26 in all, normal size, pink striped (JB); Arnside, 1.10, 27 in trap, others later (C. Scott per JB); South and North Walney Island, 1.10, eleven (T. Dean per DWK); Witherslack, 12.10, two by day in rough field (J. Whitehouse per JB). WILTS S. Ashton Common, 17.8, 21.8 (EGS and HHS). YORKS v.c.61. Muston 13.10 (P. Winter per SMJ). YORKS v.c. 64. Shadwell, early 10 (SLS). YORKS v.c.65. Bentham, early 10 (SLS). MERIONETH. Tan-y-bwlch, 5.10 (BRB). BEWICKS. West Blanerne, 2.10, Bramhous Mains, 13.10; near Hutton Bridge, 17.10. All by day. First county records (AGL). Midlothian. Gorebridge, 16.10 First county record (PWB) teste K. Bland). ABERDEEN S. Dyce, 15.10, male, pink form, rather worn. First county record (MT). Co. CORK MID. Fountainstown, 26.9, 30.9, five, 9.10, two, 18.10 (AAM). Co. KERRY N. Killarney, 13.10, male, 26.10, female, no ova (RFH). Co. CORK W. Cape Clear Island, 9.10, 12.10, two, 13.10 (MGWT). GUERNSEY. 20.9, 27.9 (TDNP).

Orthonama obstipata Fab. (3) CORNWALL W. St. Mary's Scilly, 12/19.10, one in actinic trap (JMW). HANTS S. Hayling Island, 16.7, male (JMW), SURREY. Rushmoor, 26.7 (PAD).

Agrius convolvuli L. (17 plus 1 pupa). CORNWALL W., Hayle, 6.9, found alive (VT); Cadgwith, 12.10, male (KGWE). CORNWALL E. Shevioc, 29.8, 1.9, at nicotiana (SCM), CUMBERLAND. Carlisle, 2.10 (per DWK). DORSET E. Cliff, Portland, 5.9, 8.9, two, 21.9 (B. Goater, NMH). ESSEX E. Bradwell-on-Sea, at rest on house wall (AJD). LINCS N. South Thoresby, 2.9, 9.9 (REMP). SUSSEX E. Cuckfield, 11.10 (Butler per CRP). WARWICKS. Claverdon, 28.8 (I. Reid per DCGB). YORKS v.c. 69. Spurn, 14.8, live pupa. (N. Bull per BRS); Patrington, 30.8 (T. Garland per BRS). ORKNEY. South Ronaldshay, 30.8 (J. McCutcheon per RIL). Co. CORK W. Cape Clear Island, 11.10 (MGWT).

Acherontia atropos L. (3). SUSSEX E. Bexhill, 28.8, male at rest (Hutchins per CRP). WILTS S. Ashton Common, 25.5 (ECS and MHS). YORKS v.c. 62. Port Mulgrave, nr. Whitby, 10.9 (B. Fenster per SMJ).

Daphnis nerii L. (1). NOTTS. Clumber Park, September. (M. Jones, *J. Derbyshire Ent. Soc.* 82: 17).

Proserpinus proserpina Pall. (1). SUSSEX E. Denton nr. Newhaven, 4 a.m. 25.5, male at m.v. light (S. Curson per CRP, *Ent. Rec.* 97: 147). Immigrant, probably from France. **First British record.**

Hyles livornica Esp. (63). BERKS. Aldermaston, 10.4 (P. Silver per BRB). CORNWALL W. Scorrier, 8.4, still at rest on house wall next morning (M. A. Tremewan, *Ent. Gaz.* 36: 196); Hayle, April (L. Williams per RDP); Goldsithney, April (R. Hurst per RDP). CORNWALL E. Donderry, 4.4 (R. Daniel per SCM); Newlyn East, 17.4 (Maj. S. Money per FHNS); Torpoint, 17.4 (B. Evenden per SCM); Seaton, 19.4 (A. Ingram per SCM); Saltash, 20. 4 (E. Griffiths per SCM); St. Ives, 26.4 (R. Smale per AS); Mevagissey, 4.5, very worn female (BH). DEVON S. Beer Head, 9.4, 11 a.m. at daffodils in light sun (R. Griffiths); Slapton Lea, 10.4 (JDA); Salcombe, 11.4, found dead in street (JDA); Hartley nr. Plymouth, 11.4 (R. Smaldon per SCM); Plympton, 14.40 (HT); Axminster, 17.4, at rest on wall (per PAS); Teignmouth, 17.4 (D. Laidlaw per CWP); Plymouth Centre. 20.4, 11p.m. in theatre lights (SCM); Plymouth, 14.3, found dead in fly trap (VT). DORSET. Weymouth, 4.4, three, 5.4, two (per MC); Radipole School, 3.4, 4.4 (D. Arnold per MC); Bridport, 15.4, on town pavement (*Bull. Dorset N.H.A.S.*); Portland, 10.4, three, 11.4, 16.4, 17.4, 19.4 (M. Rogers per MC); St. Albans Head, 16.4, faded (PAD); Weymouth Town, 16.4 (D. Arnold per MC); Furzebrook, 17.4 (DNRW); Stoborough, 22.4 (B. Withers per BS). HANTS S. Brockenhurst, 3.4 (D. Russwurm *Ent. Rec.* 97: 93); Lymington, 6.4, two (A. Pickles *Ent. Rec.* 97: 84); Havant, 10.4 (CBC). ESSEX S. Bradwell-on-Sea, 19.4 (SD). ESSEX N. Great Bromley, 17.4 (G. Kempston per J. Firmin). HERTS. Harpenden, no date (A. Riley per BS). KENT W. Beckenham, 18.4 (Parry per CWP). LANCS. N. Hornby, Lunedale, 5.4, in a greenhouse (Tutin per EEM and JB); Aughton, 6.4, outside window (per EEE). MIDDLESEX. Ruislip, 9.4 (WEM).SURREY. Rushmoor, 2.4, male (PAD); Bramley, 10.4 (RFB). SUSSEX E. Woodingdean, 6.4 (Lade per CRP); Lewes, between 5.4 and 12.4, at rest on window (M. Cousens per CRP); Playden, 17.4 (MFWT). WILTS N. Wroughton, 6.4 (DJB), 23.4 (AS per DJB). CARDIGAN. Rheidol valley, 19.4, at 1000 ft., battered female caught by cat (N. Modie per KS). ISLE OF MAN. Calf of Man, 17.4 (D. Walker per SCM). CO. CORK W. Kilnaclasha, 6.4, female (KGMB); Courtmacsherry, 30.4, female indoors very worn (J. Adams per KGMB; *Ent. Rec.* 98: 10). GUERNSEY. Claire Maire, 2.4, two (PDMC).

Hippotion celerio L. (1). ORKNEY. St. Andrews, Tankerness, 28.9, found in house (D. Harcum det. RIL).

Lymantria dispar L. (2). HANTS S. Highcliffe, 29.8, male with

four *A. gamma* (EHW *Ent. Rec.* 98: 21). KENT E. Aylesford, 1.9, male on garage window (EGP).

Lithosia quadra L. (6). CORNWALL E. Wareham Wood, Stoke Climsland, 23.7 (AS); Shevioc, 2.8 (SCM): possibly residents. HERTS. Broxbourne, 31.8, male (BS); KENT E. Longrope, Orlestone Forest, male, 25.7 (J. Platts per M. Halsey); another male taken there the same night (J. Fenn). WESTMORLAND/FURNESS. Beetham, 24.7 (JB).

Euplagia quadripunctaria Hubn. (2). DEVON S. Turnchapel, 30.8 (VT). Probably resident. SUSSEX E. Brighton, 9.9, female (K. Roff per CRP).

***Noctua pronuba** L. (17). CORNWALL E. Trebrowbridge, 12.10, two 12.10, two, 13.10, two 15.10 (AS). ABERDEEN S. Cyce, 26.9/15.10, twelve with many *A. gamma* (MT). Very late dates, possibly immigrants.

***Eurois occulta** L. (3). Lincs N. South Thoresby, 31.8 (REMP). OXON. Uffington, 10.8 (Classey *Ent. Gaz.* 37:16). YORKS v.c.63. Rossington, nr. Doncaster, 8.8 (J. Heppenstall per SMJ).

Mythimna albipuncta D. & S. (26). CORNWALL W. Lizard, 23.8 (SCP); Mawnan Smith, 29.8 (APF). CORNWALL E. Mevagissey, 18.9, 1.10 (BH). KENT E. Dungeness, 29.8 (D. Webb per M. Corley), 8.9, four (M. Halsey per BS). 9.9, three males, 12.9, male, 29.9, female, fertile ova (BS). SUSSEX E. Peacehaven, 26.8, 10.9, 11.9, 12.9 (CRP); Westfield, 4.9, two, 7.10 (R. Hobbs per CRP); Ninfield, 9.9 (M. Parsons per CRP). SUSSEX W. Walberton, 28.8, 7.10, 9.10 (RTR); Pagham, 9.10, female, fertile ova (BS).

***Mythimna 1-album** L. (2). HANTS S. Sparsholt, 10.10 (R. Bell per BS). SUSSEX E. Ashdown Forest, 11.10 (DD).

Mythimna vitellina Hubn. (5). CORNWALL W. Cadgwith, 18.10 (KGWE). CORNWALL E. Trebrowbridge, 13.10, 30.11 (AS). HANTS N. Leckford, 11.10 (DHS). GUERNSEY, 10.9 (per TDNP).

***Mythimna putrescens** Hubn. (1). DORSET. Portland B. O., 25.7 (M. Rogers per NMH). Last recorded from here in 1966 (NMH).

Mythimna unipuncta Haw. (c. 40). CORNWALL W. Scilly, 12/19.10, in actinic trap (A. Roberts per JMW); Cadgwith, 11.10, two males, 12.10, male, 14.10, male, 15.10, male, 17.10, three males, 18.10 (KGWE); Kynance, 21.10 (BS and R. Chatelain); Lizard, c.15.10 (BKW). CORNWALL E. Trebrowbridge, 30.11 (AS); Mevagissey, 19.9, 26.9, two (BH). DORSET. Portland, 7.4 (NMH per BRB); 21.9, two (G. Senior and NMH); 29.9, 2.10, two, 5.10, 22.10 (M. Rogers per NMH). HANTS S. Highcliffe, 13.8; Hayling Island, 28.10 (JMW); Havant, 2.10 (J. Phillips), 6.11 (CBC); Sparsholt, 8.11 (R. Bell per BS). KENT W. Erith, 23.7 (E. Hare per CWP). SUSSEX W. Rogate, 51.10 (JACG); Walberton, 23.10 (JTR). ARGYLL N. Dunstaffnage, 15.10 (JCAC). MID LOTHIAN. Gorebridge, 12.10 (PWB teste ECP-C). Co. CORK W. Cape Clear Island,

28.9, 13.10 (MGWT). GUERNSEY. 26.9, (per TNDP), 2.11, two (PDMC).

Mythimna loreyi Dup. (48). CORNWALL W. Scilly, 12/19.10, three in actinic trap (A. Roberts per JMW); Lizard, 1.10, two, 2.10, two at sugar, 14.10, eight, 15.10, three, 16.10, six – 21 in all (BKW); Cadgwith, 12.10, two, 13.10, two, 15.10, 17.10, all males, 18.10, female (KWGE); Kynance, 20.10, female, fertile ova (BS and R. G. Chatelain). DORSET. Portland Bill, 21.8, 23.9, 29.9, two, 14.10, 15.10, 16.10 (NMH). HANTS S. Sparsholt, 12.10 (R. Bell per BS). SUSSEX W. Pagham, 10.10, female, fertile ova (BS). SUSSEX E. Peacehaven, 15.10, 19.10 (CRP). CARDIGAN Tregarton, 10.10 (Tillotson, *Ent. Rec.* 98: 61). GUERNSEY. Claire Maine, 11.10, two. Fourth island record (PDMC).

Trigonophora flammea Esp. (2). KENT E. Dungeness, 5.10 (DEW). SUSSEX W. Pagham, 10.10 (BS).

Enargia paleacea Esp. (1). SUSSEX E. Ninfield, 14.7 (M. Parsons per CRP).

Apamea lateritia Hufn. (1). ESSEX N. Dovercourt, 24.7 (P. Smith & M. Anthony, photograph confirmed by BS). Fourth British record.

***Abrostola trigemina** Werneb. (1). KENT E. Dungeness, 19.9 (JMC-H).

***Photedes extrema** Hubn. (concolor Guenee) (1). SUSSEX E. Rye, 4.7 (CRP). Probably immigrant. Its nearest known British habitats are in East Anglia; but singles were caught at Eastbourne, East Sussex in 1957 and at Dungeness, East Kent, 2.7.1976.

Sedina buettneri Hering (1). SUSSEX W. Walberton, 30.9 (JTR per CRP). Probably only second record since its temporary establishment at Freshwater, Isle of Wight 1945/52.

***Caradrina clavipalpis** Scop. (2). SURREY. North Cheam, 16.4, two, with *N. noctuella* (GAC). Probably immigrant.

Spodoptera exigua Hubn. (55). CORNWALL W. Rosemullion Head, 2.4, two by day (APF). DORSET. Preston, 4.4, 14.4, two (MC); Portland, 3.10 (P. O'Brian); E. Cliffe, 8.9 (J. Chainey per NMH). ESSEX S. Bradwell-on-Sea, 30.7, two, 4.12 (SD). HANTS S. Hayling Island, 30.7 (JMW); Winchester, 2.4, 17.7, 9.10 (DHS); Sparsholt 8.10, 11.10 (R. Bell per BS). HANTS N. Burghclere, 2.4 (GCE-F). KENT E. Sandwich B. O., 3.4 (PMB); Rainham, 15.7 (M. Halsey per BS). KENT W. Newington, 25.7, with swarm of aphids; 2.10 (PJJ). OXON. Faringdon, 27.7, 29.7, 3.8, 6.8, two (Nash, *Ent. Gaz.* 37: 16). SOMERSET S. Porlock, 13.7 (BRB). SURREY. South Croydon, 25.7 (GAC); Rushmoor, 25.7, two (PAD); Leigh, 2.8, 11.10 (RF). SUSSEX E. Peacehaven, 30.7 (CRP); Pevensey, 31.7 (MP per CRP), 2.10 (CRP); Newfield, 3.10 (MP per CRP). SUSSEX W. Fittleworth, 12.8 (S. Pooles per CRP); Walberton, 22.7, 25.7, 28.7, 30.7, 2.8 (JTR per CRP); Pagham, 5.10 (BS),

10.10, male, female, 11.10, female (BS). WARWICKS. Charlcote, 21.9 (DCGB). WESTMORLAND/FURNESS. Beetham, 13.10, 14.10. WILTS N. Wroughton, 3.4, two (DJB). Co. CORK W. Cape Clear Island, 30.9 (MGWT). Co. CORK MID. Fountainstown, 30.9, tow (AAM).

Heliothis armigera Hubn. (15). BERKS. Bracknell, 10.10 (Dumbleton per BRB). DORSET. Stoborough, 2.10 (B. Withers per BS). HANTS S. Sparsholt, 11.10 (R. Bell per BS). KENT E. Westbere, 14.10 (TWH). SUSSEX W. Walberton, 3.10, 10.10, 31.10 (JTR per CRP); Pagham, 9.10 (BS). WARWICKS. Charlecote, 15.10 (AG). YORKS v.c. 61. Spurn Point B.O., 23.9 (BRS). YORKS v.c.63, Emley, 16.10 (P. Gunson per BS). YORKS v.c. 64. Shadwell, early 10 (SLS); Ripon, 3.10 (S. Mitchell per SMJ); Harrogate, 3.10 (per SMJ). Co. CORK W. Cape Clear Island, 12.10 (MGWT).

Heliothis peltigera D. & S. (16 plus c.100 larvae). DORSET. St. Albans Head, 16.4 (PAD); Stoborough, 19.4 (B. Withers per BS). ESSEX S. Bradwell-on-Sea, 19.7 (AJD). HANTS S. Lymington, 3.4 (AJP *Ent. Rec.* 97:84); Winchester, 8.7, infertile female (DHS); Hayling Island, 16.7 (JMW). KENT E. Dungeness, 26.9 (DEW and BS). OXON. Faringdon, 17.7, 30.7 (Nash *Ent. Gaz.* 37:16). SOMERSET N. Bedminster, 5.4; Berrow, 31.8 (NL). SUSSEX W. Pagham, 5.10, 10.10 (BS), 18.8/1.9, c.100 larvae (J. Porter). SUSSEX E. Hastings, 9.4 (R. Hobbs per CRP). WILTS S. Corlewell, 6.10 at ivy (EGS and HHS). WORCS. Blackwell, 1.7, fertile female (MDB). GUERNSEY. 19.9 (TDNP).

Heliothis virescens Hubn. (1). ISLE OF WIGHT: Freshwater, 27.7 (SAK-J). First confirmed record for v.c.10 (BS).

Eublemma ostrina Hubn. (1) CORNWALL E. Trebrowbridge, 10.10, female (AS).

Deltote bankiana Feb. (1). HANTS S. Denny Lodge, New Forest, 4.7 (L. Tillotson, *Ent. Rec.* 98: 36). Apparently first county record.

Chrysodeixis chalcites Esp. (1). HANTS S. Highcliffe, 9.9 (EHW, *Ent. Rec.* 98:30).

Trichoplusia ni Hubn. (3). HANTS S. Sparsholt, 5.10 (R. Bell per BS). SUSSEX W. Pagham, 10.10, male (BS). WARWICKS. Pailton, 27.9, at flowers at dusk (R. Greenwood per DCGB).

Diachrysa orichalcea Fab. (3). SUSSEX W. Walberton, 25.7, 13.9, 15.9 (JTR per CRP).

***Syngrapha interrogationis** L. (1). NORFOLK E. Hickling, 1.8 (TDNP).

Catocala fraxini L. (1). SOMERSET M. Yatton, 26.8, in house porch a melanic approaching f. *moerens* Fuchs. (A. Moulin per G. Carey, Bristol Environmental Records Centre; det. confirmed from photograph RFB).

Hypena obstitalis Hubn. (1). KENT E. Dover, 18.8 (GHY, *Ent. Rec.* 98: 8). This is only the eighth record on the mainland of

Britain or Ireland, though it appears to be established in the Channel Islands. It is the first for the month of August. Its habits are obscure and secretive; but there are at present no indications of temporary or permanent residence.

**Tyta luctuosa* D. & S. (1). SOMERSET N. Shapwick Heath NNR, 6.7, female (NL).

COCHYLIS FLAVICILIANA (WESTWOOD) (LEP.: TORTRICIDAE) AND PHYCITODES SAXICOLA (VAUGHAN) (LEP.: PYRALIDAE) IN BEDFORDSHIRE — A single specimen of *C. flaviciliana* was caught in the Rothamsted Insect Survey light trap at Houghton Regis (Site No. 452, O.S. Grid ref. TL 028 247) on the 26th July 1985 and was identified by A. M. Emmet and D. V. Manning. This is a very local species with few known localities. The nearest counties to Bedfordshire recorded for the species by Bradley Tremewan and Smith (*British Tortricoid Moths*, 1973 Cochyliidae and Tortricidae, Tortricinae, p. 84) are Oxfordshire and Berkshire. It is possible that it has been overlooked in other localities as it bears a strong superficial resemblance to the much more widespread *C. roseana* (Haworth). The larval foodplant (*Knautia arvensis*) is common in the area around the trap.

On the 17th August 1985 a specimen of *P. saxicola* was caught in the same trap and was identified from the wing venation illustrations in Goater's "*Identification Guide to the British Pyralid Moths*" (p. 129). This individual was probably a migrant as *saxicola* is usually associated with coastal habitats.

Both *P. saxicola* and *C. flaviciliana* are new county records for Bedfordshire. Thanks are extended to D. V. Manning for identifying the microlepidoptera from the Houghton Regis trap and to A. M. Emmet for confirming the identity of the *C. flaviciliana*. — ADRIAN M. RILEY, Department of Entomology, Rothamsted Experimental Station, Harpenden, Hertfordshire.

DELAYED EMERGENCE IN EUPITHECIA — I read with interest Col. Sterling's note on this topic (*Ent. Rec.* 97: 93). On 13th August 1983 I was searching buds of *Clematis vitalba* near Dorking, Surrey, for larvae of *Eupithecia haworthiata*. Most of the buds had already opened and although there were signs of feeding, I could only find one larva. This duly pupated, but did not emerge in 1984 as expected. Turning out the emerging cage at the end of the season, I rediscovered the pupa, which looked alive and healthy. A moth emerged on 27 May 1985. — P. A. CATTERMOLLE 13 Waverleigh Road, Cranleigh, Surrey.

SPECIES OF PYRALIDAE AND PTEROPHORIDAE (LEP.)
IN NORTH WALES

By H. N. MICHAELIS*

At the request of the late S. Gordon Smith, I produced a list of records of the above families found in Cheshire and North Wales to be published in *Cheshire and North Wales Natural History* (Chester Society of Natural Science, vol. iv, 1950) followed by further records in vol v, 1951/53. Having lived in the Conwy valley for the past twenty years, I feel that an up-to-date list of species occurring in the five northern vice-counties is desirable. The vice-counties are Merionethshire (48), Caernarvonshire (49), Denbighshire (50), Flintshire (51) and Anglesey (52); also are included are some records from the western vice-county of Cardiganshire (46). Regretfully, only a few records from Montgomeryshire (47) were obtained and the southern part of Merionethshire is not as well covered as other areas. I have noticed that there is a general "lumping" of records such as "Whixall", Shropshire (VC40) when those from Fenn's Moss and Bettisfield should be shown as from VC50 in Wales; as far as possible, the latter are separated.

Recent experience and increased knowledge of the local flora has led me to express doubts on a few species included in my former lists. There is still much scope for addition of species and information on distribution. The numerals i-xii refer to the months in which the imagines occur unless otherwise stated.

PYRALIDAE

Crambinae

Chilo phragmitella Hübn. Occasional, usually singly, from Cors Fochno (46), Arthog (48), Morsley and Wrexham (50) and Bagillt (51), vi-vii.

Chrysoteuchia culmella L. (*hortuella* Hübn.). Plentiful on grassland up to 2,500 feet, late v-vii.

Crambus pascuella L. Common on wet ground up to 1,800 feet and on damp flushes on sandhills and sea cliffs, vi-viii.

C. uliginosellus Zell. Local and uncommon on mosses and wet areas on sandhills in 46, 49, 50 and 52; scarce above 1,000 feet; in flight is difficult to distinguish from *C. pascuella*, vii-viii.

C. hamella Thunb. A single record from Bettisfield Moss (50) by H. L. Burrows in viii, 1950, vii-viii.

C. pratella L. (*dumetella* Hübn.) Morfa Dyffryn near Llanbedr ix (48) in 1967 (RGW), the only authenticated record, vi-vii.

*5 Glan-y-Mor, Glan Conwy, Colwyn Bay, Clwyd, LL28 5TA.

- C. lathoniellus* Zinck. (*nemorella* Hübn., *pratellus* auctt.) Plentiful on low ground though not seen above 1,000 ft., v-vii.
- C. perlella* Scop. A variable species found throughout usually in small numbers but most plentiful on mosses and saltmarshes. The usual form on limestone and other dry ground has few silver white, on saltmarshes these are usually suffused with shining ochreous while on mosses the veins and costa are suffused with dark grey or black scales (*warringtonellus* Staint.), vii-early ix.
- Agriphila selasella* Hübn. Throughout on most saltmarshes though never plentiful, vii-viii.
- A. straminella* D. & S. (*culmella* auct). Very common throughout from sea level to over 3,000 ft., vi-ix, usually in viii-ix on mountain summits.
- A. tristella* D. & S. Plentiful throughout and very variable, up to 1,000 ft., vii-ix.
- A. inquinatella* D. & S. Plentiful on well drained grassland especially on limestone, vii-ix; possibly there is a flight movement to ground over 1,000 ft., in viii.
- A. latistria* Haw. Local and uncommon mainly on humus on sandhills; Harlech (48), Deganwy (49), Prestatyn (51) and inland at Gresford (50).
- A. geniculea* Haw. Usually plentiful in dry locations, it occurs in only small numbers in eastern 49 in some years, vii-ix occasionally into x.
- Catoptria pinella* L. Local in 46 - 51 on edges of old conifer plantations, vii - viii.
- C. margaritella* L. Common on wet ground and mossland up to 2,000 feet, generally specimens from high ground are smaller than from lower mosses in 52, vii - early x, one was seen in Coed Maentwrog (48) on 5.xi.1967.
- C. furcatellus* Zett. Two records, both in 49, are Snowdon in 1930 by H. W. Daltry and a forewing brought to me by a walker from the summit of Carnedd Llywelyn (3,485 ft.) in vii 1980; could be looked for on the Carneddau and Glyder from about 2,500 feet upwards in early evening, vii-viii.
- C. falsella* D. & S. So far there are three records - Great Orme (49) in 1930 (HNM); Glan Conwy (50) in 1975 (HNM); Porthamel nature reserve (52) in 1983 (MJM); it should be searched for on mossy limestone walls at dusk or later, viii.
- Pediasia contaminella* Hübn. There are two records prior to 1905 from 48 and 49; possibly these may refer to the next species.
- P. aridella* Thunb. (*salinellus* Tutt). One on Talacre sandhills (51) by R. Prichard in 1951 and occasionally at Newborough salt-marsh (52) 1968-81, vii-viii.

Donacaula forficella Thunb. Uncommon, occasional records from 46, 49 and 50, vii-viii.

D. mucronellus Thunb. One at Bangor at light on 13.vii.1983 by MJM.

Acentria ephemerella D. & S. (*nivea* Ol.) Occasional from 49, 50, 51 and Bodorgan (52); seen in large numbers on the canal at Bettisfield (50) in 1949 and has recently been found by F. & N. in the Wrexham (50) area.

Scopariinae

Scoparia subfusca Haw. (*cembrae* auctt.) Often common throughout but varies in numbers from year to year, vii-ix.

S. pyralella D. & S. (*arundinata* Thunb.) Widespread particularly on sandhills and limestone, vi-viii.

S. ambigualis Treit. Plentiful from sea level to over 2,000 feet, the commonest mossland and high ground *Scoparia*, mid vi-ix.

Eudonia pallida Curt. Occasional in 48-52 but plentiful where found on wet ground and fen, vii-viii.

Dipleurina lacustrata Panz. (*crataegella* Hübn.) Generally common, vi-viii.

Eudonia murana Curt. Local on mossy walls and rocks, appears less plentiful on carboniferous limestone than on other rocks; appears to have two broods in vi-early vii and in viii, possibly a single brood at above 1,800 feet in late vii-viii; in 46, 48, 49 and 50, occurs on Bardsey island (50) (MJM).

E. angustea Curt. Plentiful throughout, especially on sandhills, ix-x occasionally in xi.

E. delunella Stt. (*vandaliella* H-S., *resinella* auctt.) Occasional records from Pydew (49) and Llanrhos (49) on limestone, vii.

E. truncicolella Staint. Common throughout, mainly a woodland species, vi-vii.

E. mercurella L. Widely distributed but not noticed on acid heathland, vii-ix.

Nymphulinae

Elophila nymphaeata L. Common near streams and ponds, vii-viii.

Parapoynx stratiotata L. Occasional in like situations in 48 - 52, vii.

P. stagnata Don. Occasional though more plentiful than *stratiotata* in 46 and 48 - 52, vii - viii.

Cataglyphis lemnae L. Occasional in 46 and 49-51, vi-viii.

Evergestinae

Evergestis forficalis L. Very common, larvae are a pest on brassicas and turnips; feeding at night, they hide by day in fallen leaves and debris at base of plants, can be controlled by insecticide spray applied first week of August; larvae have been found on

sea rocket (*Cakile maritima*) and sea kale (*Crambe maritima*), vii-viii.

E. pallidata Hufn. (*straminalis* Hübn.) One at Tregarth near Bangor (49) by MJM on 31.v.1964.

Pyraustinae.

Pyrausta aurata Scop. One unconfirmed record from 47 and occasional on limestone near Llandudno (49); possibly overlooked elsewhere, vi and viii.

P. ostrinalis Hübn. A few unconfirmed records from limestone, occasional confirmed records from 49, 50 and 51, vi-vi and vii-viii.

P. purpuralis L. Mainly on limestone under 600 feet in all vice counties, also on base rich soils up to 2,000 feet on Snowdon, Glydyr and Carneddau mountains (49) where the food is probably *Thymus*; two broods in v-vi and vii-viii, possibly a single brood at higher levels in vii.

P. cespitalis D. & S. Widespread, never plentiful: occurs up to 1,500 feet, v-vi and vii-viii.

P. nigrata Scop. One record from Minera (50) in 1984 (F. & N.); have searched on the coastal limestone unsuccessfully and this specimen from the inland limestone is the only known record from north Wales, v-vi and vii, also Llandudno (49) in 1985.

P. cingulata L. Common on limestone especially near the coast as the first brood in v - vi and in limited numbers in the second in late vii-viii, have seen it in abundance at Llandudno flying round steep rocks in the evening sun in vi; the food is probably *Thymus* as *Salvia* is scarce, possibly unrecorded food plants should be looked for: flies after dark and comes to light.

P. sanguinalis L. Beirne quotes "occurs plentifully on the sandhills of Flintshire" (51), probably emanating from A. O. Walker's *Macrolepidoptera of the Chester District*, 1884, which gives Rhyl; past and recent search was made without result as much of the dune coast line especially near Rhyl is developed into housing and caravan sites, the moth is probably long extinct.

Margaritia sticticalis L. The only available record is from Aberdovey (48) by A. Sidgwick in 1901.

Uresiphita polygonalis D. & S. (*limbalis* D. & S.) Two records of this immigrant are known: one on 17.viii.1953 by A. Richardson at Beddgelert (49) and one 17.x.1969 by MJM at Bangor (49).

Microstega pandalis Hübn. One record in 1950 by J. N. Thornton at Harlech (48), v-vi.

M. hyalinalis Hübn. Locality unknown in Merionethshire (48) in *A Revised Handbook of British Lepidoptera*, E. Meyrick, 1927, vii.

Eurrhynx hortulata L. Common throughout, vi-vii.

- E. lancealis* D. & S. Occurs in small numbers where *Eupatorium* is well established and is usually taken at light, vi-viii.
- E. coronata* Hufn. Occurs regularly in 51 and eastern 50 but is less frequent in 47, 48, 49 and 52 though Elder is a common shrub in all, vi-vii.
- Mutuuraia terrealis* Treit. One record from Loggerheads (51) in A. O. Walker.
- Anania funebris* Strom. Occasional in 46-50 on limestone and on base rich soil where *Solidago virgaurea* is established; all specimens seen have the large white markings together with the white sub-costal dot as described by J. D. Bradley (*Ent. Gaz.* 1964 **15**: 74) contrasting with specimens from north Lancashire and Yorkshire which have smaller markings and lack the sub-costal dot, v-vi.
- Ebulea crocealis* Hübn. Local but usually plentiful where *Pulicaria dysenterica* grows in 46 and 48-51, vi.
- Obsibotys fuscalis* D. & S. Plentiful throughout where *Rhinanthus* and to a lesser extent, *Melampyrum* grow; one bred from *Pedicularis palustris* from Ro-wen (49), late v-vii.
- Udea lutealis* Hübn (*elutalis* D. & S.) Common throughout, vii-ix.
- U. prunalis* D. & S. Common throughout, one of the few lepidoptera found feeding on alexanders (*Smyrnium olusatrum*) which is possibly a new foodplant, vi-viii.
- U. olivalis* D. & S. Frequent but never plentiful in 46-52, vii-viii.
- U. ferrugalis* Hübn. A frequent migrant sometimes abundant in late summer, also breeds here, v and vii-ix.
- Mecyna asinalis* D. & S. Occasional in 49 from Llandudno westwards to Llyn; most noticeable as a larva in v making white blotches on leaves of *Rubia peregrina*, a plant at the north-western edge of its range in England and Wales, v-vii.
- Nomophila noctuella* D. & S. The distribution relies on the size of spring migration and the moth appears in varying numbers each year, v-vi and vii-x.
- Pleuroptya ruralis* Scop. Common among nettle, not seen above 800 feet though ruined farms have considerable nettle patches at much higher altitudes, vii.

Pyralinae

- Hysopygia costalis* Fabr. Occasional in 46 and 48-52, usually at m.v. vii-viii.
- Orthopygia glaucinalis* L. Until recently, had only single records from 48-51 though now appears more frequently in 49 and 50, vii-viii.
- Pyralis farinalis* L. Once common in farm buildings for Gresley-Jones found it common at Llandudno in 1910, the only recent records are from Gresford 1981-84 (F. & N.), viii.

Aglossa pinguinalis L. Years ago this was frequent in farm buildings and prior to 1951 was found 46 and 49-51; the latest record is from Bardsey (49) on 20.vii.1966 (MJM), vi-vii.

Endotricha flammealis D. & S. All recent records are from VC49 namely, Bardsey 1967, Porth Ceriad 1970, Bangor 1979 and Sychnant Pass, Conwy 1983; other records are prior to 1951 from 48, 49 and 51, vii-viii.

Galleriinae

Achroia grisella Fab. Probably widespread in bee hives, so far records are from 49, 50, 51 and 52; a few moths were found on walls and tree trunks far away from cultivated hives which suggests larvae feed in wild bees nest's, vi-ix.

Aphomia sociella L. Recorded from all vice-counties and is common in 49 and 50, vi-viii.

Aphomia gularis Zell. A dead specimen sent to me from a grocer in Flint (51) which was probably imported with nuts, 10.iv.1981.

Phycitinae

Anerastia lotella Hübn. Uncommon or overlooked on coastal sand-hills; single specimens from 49, 51 and 52, vii.

Cryptoblabes bistriga Haw. Not recorded since 1967 when a specimen was found at Glan Conwy (50) and Coed Maentwrog (48), vi-vii.

Acrobasis consociella Hübn. Widespread, 48-52, easily found as larvae on small oak trees, comes readily to light, vii-viii. (Day lists *tumidella* Zinck (*zelleri* Rag.) as common near Holywell (51) but does not list *consociella*; there may be mis-identification for I have no records of *tumidella* and feel confirmation is required.).

Numonia advenella Zinck. Occasional records from widespread localities in 48-52; larvae in vi from *Sorbus aucuparia* at 1,200 feet, vii-viii.

N. marmorea Haw. Occasional in 46 and 48-52 usually among *Prunus spinosa* near the coast.

Pempelia palumbella D. & S. Widespread in 46 and 48-52, often plentiful at light on heathland, vii-viii.

Metriostola betulae Goeze. Local in 46 and 48-52; larvae sometimes common on *Betula pubescens* in vi at Fenn's Moss (50), vii-viii.

Pyla fusca Haw. Often plentiful on heaths, found occasionally in oak woods where heather is not present, is it also a migrant, v-vii?

Phycita roborella D. & S. Common in old oak woods in 46 and 48-51, vii - viii.

Dioryctria abietella D. & S. Despite of widespread *Pinus sylvestris*, we have only two records — Hafod Fawr (48) in 1981 (MH.) and Cwm (51) by the late E. S. Lewis, vii - viii.

- Hypochalcia ahenella* D. & S. Occasional in 47, 49 and 50, common on the Creuddyn limestone (49), vi - vii.
- Pempeliella diluta* Haw (*dilutella* Hubn.) Widespread but never plentiful on limestone, 46 and 49 - 52; the associated ant *Lasius flavus* is plentiful especially on coastal limestone, vii-viii.
- Euzophera pinguis* Haw. One at light by S. Coxey on 13.viii.1984 near Vivod, Llangollen (50); though ash trees are widespread, this is the first authentic record for north Wales.
- Ephestia* species. With one exception, the larvae feed mainly on stored products such as grain, flour, dried fruits, beans etc., and it is difficult to obtain records.
- Ephestia elutella* Hübn. Occasional in shops and houses in 48-52, v-x.
- E. kuehniella* Zell. Occasional in 49-51 mainly from bakeries, viii-ix.
- E. figuliella* Gregs. One traced to mixed dried fruit in Llanrwst (50), 11.viii.1971.
- E. parasitella* Staud. ssp *unicolorella* Staud. Occasional but widespread in 48-50, usually at light or beaten from old ivy; a dingy unicolorous species which may well be overlooked, vii-viii.
- Homoeosoma nebulella* D. & S. Available records are Great Orme, Llandudno (49) by Denzil ffennell on 10.vii.1969, Bettisfield (50) by J. Hignett circa 1936 and one prior to 1903 in Day's list from Holyhead (52), vi-vii.
- H. sinuella* Fab. New to north Wales are one from Marford (50) on 4.vii.1981 (MH) and two from Gresford (50) in 1984 (F & N), vi-viii.
- Phycitodes binaevella* Hübn. Records are from Abersoch by N. L. Birkett, Cwm-y-Glo near Llanberis by D. Agassiz, Llandudno limestone (HNM), Waunfawr (MH) all in 49 and Glan Conwy in 50 (HNM) and Eglwyseg near Llangollen (50) by P. C. Wormald (EMM 1867), vii.
- P. saxicola* Vaugh. Occasional at Glan Conwy (50) by HNM and one at Waunfawr (49) by MH, vii-viii.
- P. carlinella* Hein. Occasional at light and bred from ragwort (46 and 49-52), vii and larvae in viii.

PTEROPHORIDAE

Agdistinae

- Crombruggia laetus* Zell. One flying over heather and rushes on Hiraethog moors (50) by HNM on 9.vii.1968 which was probably carried from south-west Europe by strong south-west winds which deposited red dust in England and Wales; thought to be the second authentic specimen (det. BM.) in British Isles and is now in the British Museum.
- Capperia britanniodactylus* Gregs. One larva on upper shoots of

- Teucrium* in woodland near Llanrwst (50) in June 1980 and later reared (HNM); still occurs in Cheshire (58) so may be overlooked in north Wales, vii.
- Amblyptilia acanthodactyla* Hubn. Widespread in 48-52 and 46, sometimes abundant on heathland from sea level to 1,000 feet, vii and ix-v.
- A. punctidactyla* Haw. One from 47 by C. M. Jones and one from Rhuddlan (51) by E. S. Lewis.
- Platyptilia calodactyla* D. & S. One from Minera (50) 17.viii.84 (F. & N.) det. BM; the record from Whixall (50) recently reported in *Proc. Lancs. & Ches. Ent. Soc.* 1979/80, proved to be *A. acanthodactyla*.
- P. gonodactyla* D. & S. Appears to be widespread in eastern 50 and 51 with only occasional records from 48 and 49, vi and viii/ix.
- P. pallidactyla* Haw. Often common among *Achillea* throughout, vi-vii.
- P. ochrodactyla* D. & S. One old record, locality unspecified, from eastern 51; *Tanacetum vulgare* is considered a local plant though the moth is found on Wirral (58), confirmation is desirable.
- Stenoptilia zophodactylus* Scop. single specimens were found on the Great Orme (49) in July 1968 and 1974.
- S. bipunctidactyla* Scop. Common among *Scabiosa* in 46 and 48-52, vi-x.
- S. pterodactyla* L. Widespread in 48-52 but never common, vi-viii.

Pterophorinae

- Pterophorus tridactyla* L. Fairly common on *Thymus* on limestone in 48-52, vi-viii.
- P. baliodactylus* Zell. One record from Mold (51) by the late Wm. Mansbridge, vii-viii.
- P. pentadactyla* L. Common among *Convolvulus* in 46 and 48-52, vi-vii occasionally in viii.
- S. spilodactylus* Curtis. A local insect found elsewhere on the chalk downs and coast of southern England; in north Wales it is found where *Marrubium vulgare* is well established from the Llandudno area (49) through 50 to Prestatyn (51) and is found on limestone mainly near the coast, vi-vii. The larva hibernates among leaves at the base of the plant later feeding in v and vi and pupates along the mid-vein on the upperside of a leaf. It is suggested that the plant was introduced as a medicinal herb by monks in the 11th/13th centuries (cf. *Weeds and Aliens*, Edward Salisbury, New Naturalist Series No. 43). This is open to question as introduction would be likely to be by seed rather than by roots containing hibernating larvae of an insect with a south coast distribution, e.g. seeds would be easily transpor-

table and more certain of reproduction than roots bought by horse or mule from the Isle of Wight or the South Downs. The moth is usually common where found which suggests that both insect and plant were originally native to the coastal limestone of north Wales.

Adaina microdactyla Hübn. Larval galls in the previous years stems of *Eupatorium* are frequent throughout from October to May though the moth is rarely seen, v-vi and viii.

Leioptilus osteodactylus Zell. Widespread but never common mainly on limestone where *Solidago virgaurea* grows in 49-51, vi-vii.

L. tephrodactylus Hübn. Recorded from Bangor (49) by Kendrick on 5 vii.1862 (Zoologist 1863), more recently by E. C. Pelham-Clinton at Glandyfi (46) in 1949 and Dolgelly (48) by the late Basil Snell in 1949, vi-vii.

L. lithodactyla Treits. Fairly common among *Pulicaria dysenterica* and less so among *Inula conyza* in 46 and 48-52, vii-viii.

Emmelina monodactyla L. Common in 46, 47 and 48-52, ix-iv.

Marasmarcha lunaedactyla Haw (Agdistinae). There is a record prior to 1903 from the Leete limestone near Mold (51) from Day's List; I have included this record with some doubt as *Ononis repens* is very sparse in this area. If the moth does occur in north Wales, it could be expected on the coastal sandhills of 50 and 51 where the foodplant is plentiful; C. S. Gregson collected frequently on these dunes and is hardly likely to have overlooked this species. It could be mistaken for *L. lithodactyla* which is plentiful on the Leete.

Alucitidae

Alucita hexadactyla L. Is included though not of the Pterophoridae and is plentiful throughout among *Lonicera*, viii-iv.

Acknowledgements

Much information was received from Mrs. M. J. Morgan, Michael Hull, R. G. Warren and from the joint efforts of B. Formstone and M. Newstead, the last two have recently become interested in the microlepidoptera.

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ANTICHLORIS ERIPHIA FAB.
(LEPIDOPTERA : CTENUCHIDAE),
FIRST RECORD FOR BRITAIN

By R. J. BARNETT*

On 6th February 1985 Mrs. F. Gardner of Queniborough, Leicester brought in to the New Walk Museum, Leicester, a living specimen of a black and green moth, similar in shape and appearance to a burnet moth. A bunch of bananas had been purchased by Mrs. Gardner on the 1st February from Leicester Market. The moth had emerged from a yellow fibrous cocoon which was still attached to one of the bananas.

I established that the moth belonged to the family Ctenuchidae, and then sent it to the British Museum (Natural History) for specific determination. Mr. D. J. Carter kindly identified it as *Antichloris eriphia* Fab. The similar *A. viridis* Druce is a relatively common import to Britain amongst banana consignments and hence is listed by Bradley and Fletcher, 1979. This is the first known occurrence of *A. eriphia* in this country. Other specimens in collections may have been mis-identified in the past as *A. viridis*. This may be checked by reference to the characteristic pointed shape of the hind wing in *A. eriphia*.

A. eriphia has a fairly widespread distribution across tropical South America and other specimens could easily be imported to Britain accidentally. This particular specimen (and its freeze-dried cocoon and banana) are now held in the collections of Leicestershire Museums, accession number Z63.1985.1 and .2.

Acknowledgements

My thanks to Mr. D. J. Carter for identifying the specimen and for providing further information.

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INTERESTING SCOTTISH LEPIDOPTERA IN 1985

By K. P. BLAND*

The following interesting species of Lepidoptera have been encountered by the author in Scotland during 1985.

Nematopogon metaxella (Hübner, 1810-13). On 22.vi.1984 Mr. J. M. Nelson took a single specimen of a *Nematopogon* which he subsequently passed to me for checking. It proved to be *Nematopogon metaxella*, a species previously only recorded in Scotland from Berwickshire (Bolan, 1932), and Sutherland (Buxton, 1854). The latter record has always been considered suspect as none of Buxton's Sutherland specimens have survived. Mr. Nelson's specimen had been taken in Milton of Drimmie Wood NNR, near Blairgowrie, Perthshire (O.S. Grid NO/1650; VC. 89) and so considerably extends the confirmed northwards distribution of this species. A visit to the wood (by KPB) on 23.vi.1985 confirmed the presence of a breeding colony of the species as a further 4 specimens were seen in flight amongst the alders.

Caloptilia cuculipennella (Hübner, 1796). This species was first noted as Scottish in 1878 when Sir Thomas Moncreiffe recorded it from Moncreiffe Hill, Perthshire. Subsequently Mr. E. C. Pelham-Clinton took it at Crichton, Midlothian (O.S. Grid NT/3762) on 4.vi.1973. On 2.iv.1985, while collecting at Arniston Engine, Midlothian (O.S. Grid NT/3361; VC. 83) I beat 4 hibernating imagines of *C. cuculipennella* from overhanging *Luzula sylvatica* by the riverside. A further specimen was obtained in the same way in the same locality on 14.xii.1985. It is gratifying to be able to report its continued presence in this area.

Acrolepiopsis betulella (Curtis, 1838). One week-end at the beginning of March I was looking through some old records in the literature when I came across the following:

"An insect new to the Edinburghshire list was taken at Roslin, on the 22nd (May 1851), flying by the bank of the river: it is the *Roeslerstammia pygmaeana* of Haworth and Stephens." (Logan, 1852).

This is still the only record of *Acrolepia pygmaeana* (Haworth) from Scotland. I resolved that come June I would look for the leaf-mines of this species in *Solanum dulcamara* in Roslin Glen LNR, Midlothian (O.S. Grid NT/2762: VC.83) to confirm that the species still occurred there. On reflection I decided not to wait until June but to go out immediately and beat for hibernating imagines. In the course of the afternoon, much to my surprise, beating overhanging dead *Luzula sylvatica* on steep banks produced two rather worn

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examples of what I immediately took to be *A. pygmaeana*. They were mounted and set aside. In early September their turn came to have their identities checked. I was rather surprised when, in two different keys, they would not come out to *pygmaeana* but always ran to *betulella*. A check of the genitalia confirmed that they were, in fact, *Acrolepiopsis betulella*, the species recently rediscovered, after 90 years in hiding, by Dr. Mark Young in Wester Ross (Young, 1985). Dr. Young and others have now reared *A. betulella* from larvae feeding in the flower-heads of Wild Garlic, *Allium ursinum* Linn. (Kyrki & Agassiz, 1985; Young, 1985). The Roslin specimens are of interest, not only because they are less distantly removed from its last century stronghold of Castle Eden Dene than those from Wester Ross, but because they demonstrate that *A. betulella* also hibernates over winter as an imago in this country.

The question arises, of course, as to whether Logan's account of the capture of *R. pygmaeana* in 1851 does not in fact refer to a misidentified *A. betulella*. Two September afternoons spent searching for the food-plant of *A. pygmaeana* in the vicinity of the 1985 captures were without success although Wild Garlic was common nearby. *Solanum dulcamara* is a rather uncommon plant around Edinburgh and, when it does occur, it seems to be associated with recently disturbed ground.

Mompha miscella (D. & S., 1775). Three larvae, mining the leaves of *Helianthemum chamaecistus*, collected on 18.v.1985 in Fealar Gorge, Perthshire (O.S.Grid NN/9979; VC. 89), part of the Beinn A'Ghlo SSSI, yielded two chalcid parasites and a single imago of *Mompha miscella* (D. & S.) on 4.vii. and 8.vii.1985 respectively. The only previously published record of this species from Scotland is from Aberdour, Fife (Evans, 1905) thus the present record considerably extends its known range in the north.

Acleris logiana (Clerck, 1759). On 17.iii.1985 a single specimen of *Acleris logiana* (Clerck) was beaten from a leaf-congested tangle of Honeysuckle in Petersmuir Wood, East Lothian (O.S. Grid NT/4866; VC.82). This finding substantiates the occurrence of this species in Southern Scotland (Balfour, 1930).

Parapoynx stratiotata (Linnaeus, 1758). A specimen of this southern species was reared from a larval case containing a pupa, attached to the underside of a floating leaf of a Water Lily. The pupa was collected on 6.vii.1985 at the Black Lochs SSSI, Argyllshire (O. S. Grid NM/9231; VC. 98) while on a field trip with the Glasgow Natural History Society. It emerged, during my absence on holiday, between 13-25.vii.1985, and when discovered at the latter date was already dead. There appears to be no previously published records of this species north of the Border.

Euchoeca nebulata (Scopoli, 1763). This species is very local in Scotland, previously being known only from the Loch Lomond area (Christie & Christie, 1982). It is nice to be able to report that it is not restricted to that area (i.e. VC. 86 & 99) but also occurs in Strathardle. On the dull sultry afternoon of 23.vi.1985 it was abundant, flying in company of *Hydrelia flammeolaria* (Hufn.) and *Asthena albulata* (Hufn.), in the alder carr in Milton of Drimmie Wood NNR, Perthshire (O.S.Grid N0/1650; VC.89). It is probably more widespread in Scotland than these few records suggest, but has been overlooked, like *H. flammeolaria* and *A. albulata*, due to their diurnal habits.

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I am very grateful to Mr. J. M. Nelson for the original specimen of *N. metaxella*, to Mr. I. C. Christie for the invitation to visit the Black Lochs with the Glasgow Natural History Society, to the Nature Conservancy and Scottish Wildlife Trust for allowing me to collect on their reserves and to the Royal Museums of Scotland for access to and use of the Scottish Insects Records Index.

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A HISTORY AND INVESTIGATION INTO THE FLUCTUATIONS OF *POLYGONIA C-ALBUM* L: THE COMMA BUTTERFLY

By COLIN PRATT*

(continued from p. 203)

The ascent from 1914

Much information and retrospective records were published in the entomological magazines of the day soon after the turn of the tide in 1914 and two early brief summaries were also written (Riley, 1929 ; Walker, 1938). But a number of different dates have been proposed by different researchers for the start of the revival, ranging from 1915 to 1929 — the later dates being uninformed. The first published sign of expansion on a local scale came from Eastbourne, when three imago's were noted in the autumn of 1915 whose antecedents had perhaps lived on the Kent border — the first within living memory — although it was disputed that these individuals formed part of the main expansion. In 1916 an extension of range was noted into Wiltshire and southern Somerset where the insect was found to be widely distributed and common. The species was abundant in Shropshire in 1917 and a singleton was even seen in the south-east London area but the first permanent return to a previously abandoned county came to Cheshire during the same season, when it was very abundant. Three individuals were recorded in Berkshire in 1918 and other reports came from Staffordshire and Scarborough, and the butterfly was fairly common in parts of Dorset. In the following year several *c-album* appeared in Hampshire, it was seen in Buckinghamshire and Essex, and the first Hertfordshire record for at least 40 years was also noted. In 1920 the insect reached Nottinghamshire and 1921 was a remarkably good season for the species — it was freshly noted on the Isle of Wight and in the New Forest, Devon, Warwickshire, and numbers rose elsewhere. In 1922 the species was common in Warwickshire and Cheshire and it penetrated into Leicestershire. In 1923 it was noted in Bedfordshire and Northamptonshire, and two years later in Huntingdonshire. The butterfly suddenly became common in West Sussex and Hampshire in 1926 and it returned to Montgomeryshire. Four specimens were seen on the Kent/Sussex border in 1927 and the insect became annually noted in the London area; in the next season reports came from Surrey and the first Cambridgeshire record for 86 years was logged. The species was seen in about half a dozen localities in

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Surrey in 1929, was now well established in East Sussex, and was noted annually in Kent from 1930 onwards. Then for two years this large scale expansion of distribution came to a halt but numbers increased again in 1933 and the butterfly was recorded in Cornwall for the first time ever; it also returned to Norfolk where the last sighting had been in 1861 — in both of these counties, and in Essex, the insect was reported annually after this time. In 1934 two individuals were seen in Lincolnshire and it was noted again in Derbyshire and Lancashire. The butterfly returned to Suffolk in 1935 but after this season the rapid and large scale expansion of range again temporarily ceased, although locally it continued to spread. Another singleton turned up at Scarborough in 1937 and the insect commenced a recolonisation of West Yorkshire in 1939; in the north riding it became re-established in 1941 and it was seen annually in Derbyshire from this time onwards — but the establishment was only temporary as the last colonial sightings from that part of Yorkshire came in 1951 and 1957. In 1946 the species reached as far north as Durham. Around the middle of this century stability also broke down in other front-line northern counties. In Lincolnshire a decline took place over the 1950's although the insect remained established in the south; similarly Derbyshire suffered a paucity of sightings from the mid 1950's until 1973, only being seen in 1961. The species was missing from Staffordshire from 1957 to 1968, in West Yorkshire from 1951 to 1975 and in the north riding from 1958 to 1972, from Nottinghamshire from 1948 to 1975, and from Lancashire from 1949 to 1979. This indicates another large retreat in range to south of a line drawn from the Wash to Liverpool over that era. Losses were also experienced in west Wales during these years. Numbers also fell in Surrey, Norfolk, Lincolnshire, Dorset, Cambridgeshire, Cheshire, Buckinghamshire, Sussex, Hampshire, and in parts of north Wales. Although *c-album* was reported for the first time on the Scilly Isles in 1971, the territorial losses only started to be reversed on the mainland during the mid 1970's where the butterfly returned again to south Yorkshire in 1976, to Lancashire in the following season, and to Leicestershire in 1979. Since then the species "has been particularly abundant in the early 1980's and has even spread to new areas" (Heath *et al*, 1984) but there has been no numerical increase in some south coast counties over these years — mirroring similar north/south differences during the 1860's. The insect penetrated south Yorkshire again in 1980 and, although still rare, it has been regularly seen since; in the north riding records came in 1973, 1974 and 1981. The Comma has been regularly noted in Nottinghamshire since 1980 and it returned yet again to Lancashire in 1982.

The maps

A number of distribution maps have been published (Ford, 1945; Sanders, 1955; Heath, 1970, 1974, 1975, 1982; Howarth, 1973; Ford, 1982; Heath *et al*, 1984) but none have illustrated frequency or fully revealed the early distributions and 19th century volatility in the north.

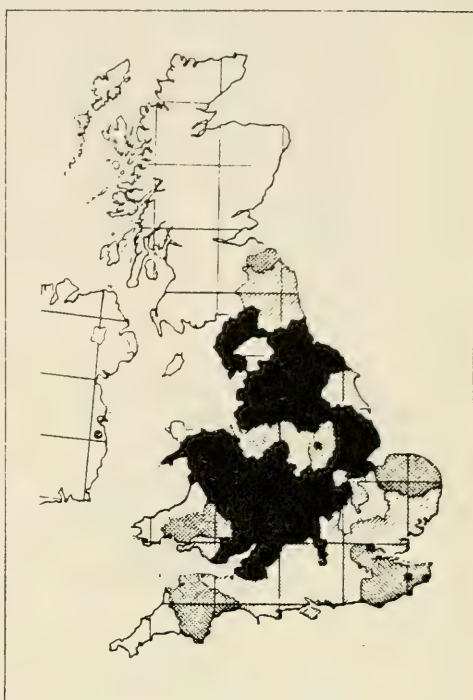
The adjoining maps have been compiled from the most favourable records researched from each county over the periods quoted and are a diagrammatical representation of the main fluctuations in distribution and frequency of the Comma butterfly from early entomological historical times to date. The vast majority of records were from the now outdated county names and areas and these old boundaries have been used in compiling the maps and text. Largely the maps have been drawn on a county-wide basis to illustrate national changes and do not show local deviances unless sufficient specific information has been published — no doubt each county has its own detailed story to tell.

Whilst there is no doubt that hundreds of *c-album* were released, with one exception (a supposed singleton near Glasgow in 1936), as far as the maps are concerned all records have of necessity been taken of naturally occurring individuals.

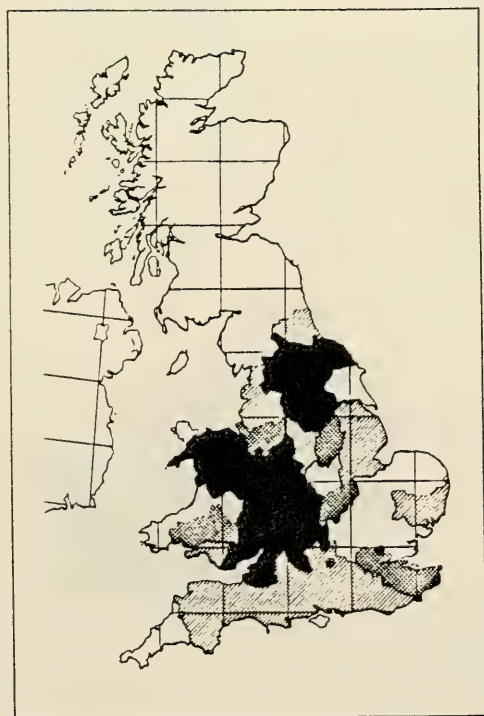
In the absence of sufficient published data from each county for every decade of the 19th century, and as early records were rarely exceeded, an approximation of very early positions can be gauged from the use of records from a later era. Thus, at its most extreme, although map 1 is compiled from the best of more than a century's records it is probably a reasonable representation of the range and frequency enjoyed by the insect in the early 1800's. Similarly, map 2 clearly shows that the initial decline over the first half of the 19th century was substantially one of frequency in the south-east and best illustrates the species status at about 1870. Unillustrated, due to the lack of records over such a short and early period, is the retreat from Scotland and a number of northern England counties during the mid 19th century — but the butterfly's distribution (not frequency) was almost certainly very similar to that experienced during the 1920's. The continuing decline in numbers in the east, with some county-wide extinctions and accompanied by a more permanent loss of northern territory, is shown in map 3. Map 4 illustrates the area where *c-album* remained permanently established. The initial expansion in all directions except north shows clearly in map 5, a mainly easterly direction being maintained until about 1929 — maps 6 and 7. During the 1930's the insect swung north from the south-east, map 8, and only after 1937 did it penetrate north of Liverpool again, map 9, reaching a maximum at mid-century. From 1958 to 1968 the species became extinct in these



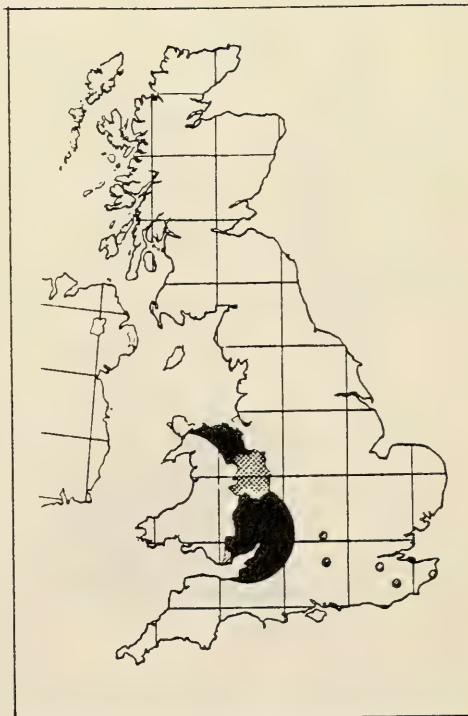
Map 1 : 1800 - 1913



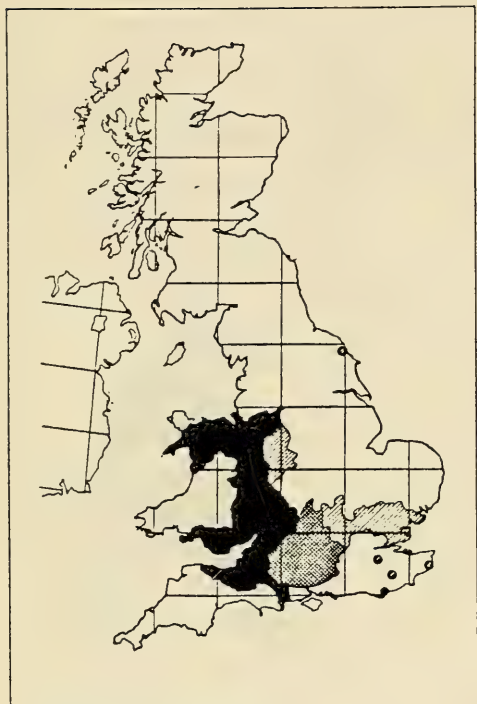
Map 2 : 1857 - 1913



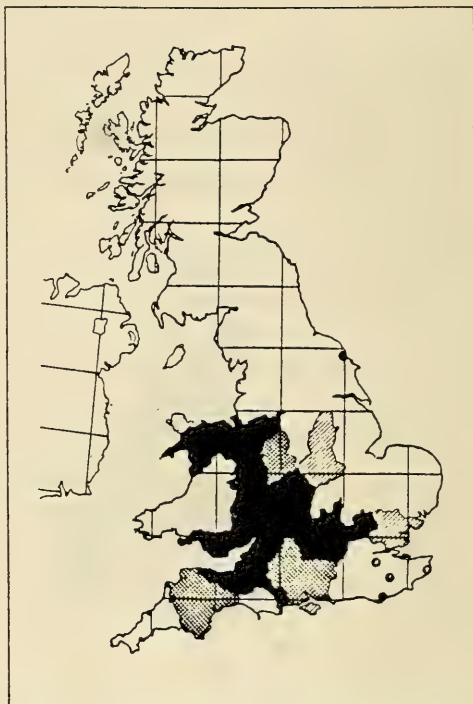
Map 3 : 1872 - 1913



Map 4 : nadir



Map 5 : nadir – 1919



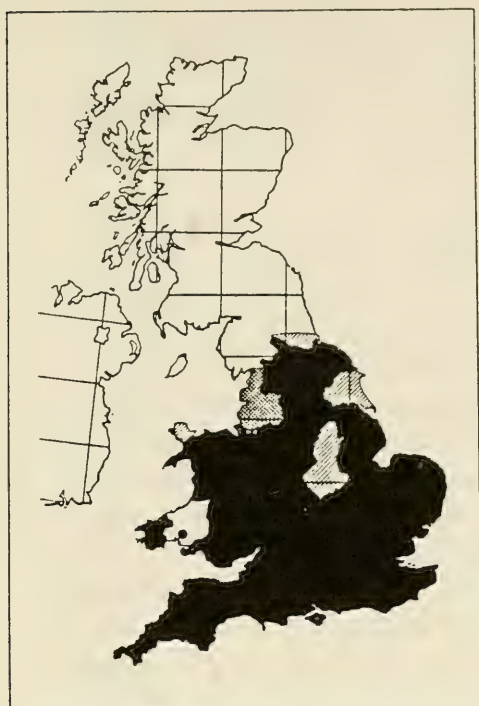
Map 6 : nadir – 1922



Map 7 : nadir – 1929



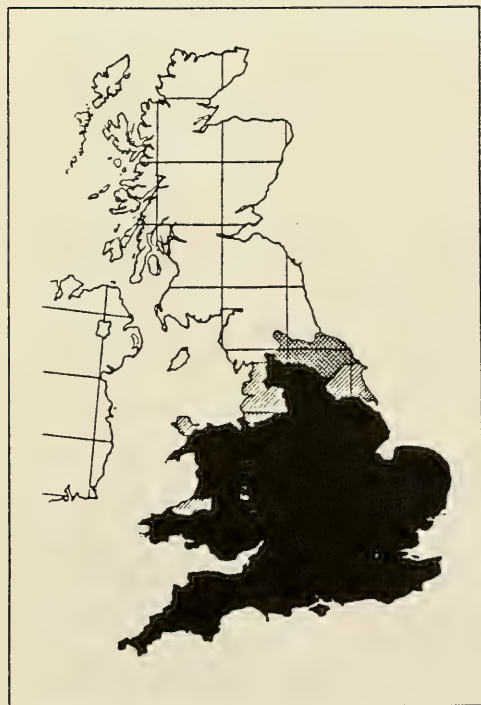
Map 8 : nadir – 1937



Map 9 : nadir – 1957



Map 10 : 1958 – 1968



Map 11 : 1969 – 1985

KEY

-  absent
-  1 to 2 per decade
-  3 per decade to 3 per annum
-  more than 3 per annum

northern districts and in some parts of Wales, as map 10 shows. The regaining of this territory in more modern times can be seen in map 11 which illustrates the position in the early 1980's.

The ascent was a directional reversal of the decline, most difficulty being experienced in the spread to the north and, to a lesser extent, to the west.

It was thought that the Comma became retracted to Gloucester, Hereford, and Monmouth, at the middle of the 19th century — “considerably exceeding its earlier range” this century (Downes, 1948) — but none of this coincides with the facts. It was also said that the insect was restricted to Monmouthshire, Worcestershire, and Herefordshire, and that its “dispersal was primarily in a northern and north-eastern direction, afterwards mainly eastern and southern, the isolated records from Essex (1919) and Eastbourne (1924 and 1926) . . . not forming part of the main phenomenon” (Riley, 1929). In fact the butterfly had struck east into Cheshire by 1918, having been permanently established in the adjoining counties of north Wales and Shropshire, having previously spread into southern Somerset from the north; moreover, it was to be sixteen years before the boreal record was exceeded.

Over the first quarter century, the speed of recolonisation was consistent at four to six miles per annum — not as fast as might have been thought.

(to be continued)

BRYOTROPHA SPECIES (LEP.: GELECHIIDAE) ON FLOWERS. — Referring to the note by R. J. Heckford (*antea*: 123), I have seen imagines of *Bryotropha terrella* (D. & S.) occasionally resting on flowers of a cultivated yellow *Achillea* in my garden during evenings in June and July. Also, I find *Scrobipalpa nitentella* (Fuchs) (Gelechiidae) resting frequently on flowers of *Tripleurospermum maritimum* (scentless chamomile) on fringes of a local saltmarsh on sunny evenings in July and August. H. N. MICHAELIS, 5 Glan-y-Mor, Glan Conwy, Colwyn Bay, LL28 5TA.

THE BLACKNECK (LYGEPHILA PASTINUM TREITS.) IN STAFFORDSHIRE. — On July 11th 1986 several moths of this species were found in the daytime along a disused railway line at Gnosall on the western border of Staffordshire. The only previous record for the county was of a single example in a moth trap in 1983. The line in question is being kept open as a footpath and bridleway and is proving of considerable interest for Lepidoptera. On June 19th 1985 I found *Homoeosoma sinuella* Fabr. which although a common species in the south was also new to Staffordshire. R. G. WARREN, Wood Rinding, 32 Whitmore Road, Trentham, Stoke-on-Trent, ST4 8AP.

THE OCCURRENCE OF *ANTIGASTRA CATALAUNALIS*
DUPONCHEL (LEPIDOPTERA: PYRALIDAE) IN
1985, AND AN ACCOUNT OF ITS PREVIOUS HISTORY

By J. M. CHALMERS-HUNT*

The 1985 Occurrence

At the meeting of the Amateur Entomologists' Society on the 12th October 1985, Mr. J. T. Radford showed me a small unidentified pyrale, which I immediately recognised as this extremely rare migrant species. He had taken it on the morning of the 3rd October 1985 from the m.v. light trap situated in his garden at Walberton near Arundel, West Sussex, and was particularly struck at the time by its remarkable activity. The specimen, a male, has an alar expanse of 17mm, is in excellent condition and had evidently arrived sometime during the night of the 2nd/3rd.

Mr. Radford tells me the moth appeared in the middle of a good migrant period at Walberton, especially for the common species, notably *Autographa gamma* L. and *Phlogophora meticulosa* L., with the much rarer *Rhodomestra sacraria* L. and *Heliothis armigera* Hb. there on the 1st and 3rd respectively. It may be that Mr. Radford's *catalaunalis* also formed part of an immigration of *Mythimna loreyi* Dup. and *Euchromius ocella* Haw., both of which appeared on or about the same date in unprecedented numbers over a wide range in southern England, along with *Spodoptera exigua* Hb.

Previous History

Antigastra catalaunalis appears generally to have been so badly recorded in the past, that of a possible 19 specimens that have occurred prior to 1985, only ten it seems have adequate data. Although extremely slender and somewhat inconspicuous for a pyrale, the moth is not hard to recognise and has been figured repeatedly in the literature, cf. Knaggs (1868), Leech (1886), South (1890) and Barrett (1904).

The first British *catalaunalis* occurred at Cheshunt, Hertfordshire in 1867. It was captured by W. C. Boyd, who writes: "I took it in our garden at Cheshunt, September 18th, flying over a flower bed in the dusk of the evening. I should probably not have paid much attention to it, taking it to be only *P. forficalis*, which was extremely plentiful that evening, if I had not been struck by its peculiar flight, hovering backwards and forwards more like the common house-fly than anything else I know" (Stainton, 1867). This specimen was ultimately acquired by F. G. Whittle, and is now in the BMNH.

Leech (*op. cit.* 45) records the species from "near Dover", but
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I have been unable to trace the source of this, though his "Near London" presumably refers to the Cheshunt occurrence. Meyrick's (1895, 1928) "Kent, a rare immigrant only" may be based on Leech.

Bankes (1906) in a graphic account of the capture of a *catalaunalis* at Mousehole near Penzance, Cornwall, on the 6th September 1906 says "I disturbed and netted at 4.35 p.m. from a mass of growing weeds beside the footpath (consisting chiefly of *Atriplex*, *Chenopodium*, and *Polygonum aviculare*) a small yellow moth which as it flew suggested a small worn *S. ferrugalis*. Imagine my astonishment when on glancing at it in the bottom of the net I instantly recognised it as *A. catalaunalis* — one of the greatest rarities in the whole British List. After a long tussel during which it danced about incessantly in my net forcing itself into every fold, and making a determined dive whenever it thought there was a crevice through which it could possibly escape (I have never had a more active and troublesome moth to deal with!), it was duly boxed". He goes on to say that on that same day he disturbed and took 10 male and two female *S. exigua*, and that since the 27th August a total of 101 *exigua* were taken. Bankes' *catalaunalis* is in the BMNH.

Dannreuther (1951) records two *catalaunalis* that occurred in 1950. Thus, on August 23, "a fresh specimen taken at Down Hatherley, Glos. (T. B. Fletcher)"; and, on October 6, a "fresh specimen taken at Bickenhall, Som. (A. H. Turner)". Turner (1955: 114) specifies "Strawberry Tree, Bickenhall". The Gloucestershire specimen was recorded in greater detail (cf. Fletcher, 1950).

In 1956, two were taken at Mawgan, Helston, Cornwall, on 10th and 11th September; and in 1958, one was taken at Freshwater, Isle of Wight, on 14th September. All three occurred in a m.v. trap and were exhibited (Knill-Jones, 1960). Also in 1958, but at Dover, Kent, one taken 5th September and another 14th September (Youden, 1959). Jewess (1977) records a female taken by Mrs. V. Taylor at m.v. at Newington, Kent on 28th September 1976.

One very old specimen without data, but formerly in the H. Burney and A. B. Farn collections is recorded as being in the A. F. Griffith collection in the National Museum of Wales, Cardiff (Anon., 1925:23).

Finally, there are in the British Museum (Nat. Hist.), six *catalaunalis* without locality or date. These consist of one labelled "Purdey coll/Bright"; and, five in the L. T. Ford collection, labelled in L. T. Ford's hand: "Catalaunalis/ex coll. Harris".

Acknowledgements

I thank Miss Pamela Gilbert (Department of Entomology, British Museum (Nat. Hist.)) for permission to peruse Bankes' *Diary* and to

make extracts therefrom, and Mr. Michael Shaffer (Department of Entomology, British Museum (Nat. Hist.)) for permission to examine the *Antigastra catalaunalis* in the Museum. I also acknowledge Mr. Radford's kindness in allowing me to record the details of his *catalaunalis*.

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ACRONICTA ALNI L. (LEP.: NOCTUIDAE) IN KENT — *A. alni* is a scarce moth in Kent, so it is worth recording that I had 8 males at my light trap between 13th and 24th June 1986, including 3 on the 19th. DENNIS O'KEEFE, 50 Hazelmere Road, Petts Wood, Orpington, Kent.

Notes and Observations

A NOTE ON THE TERM 'TESTACEOUS' IN ENTOMOLOGY. — Recently, in looking up a reference in the *Ent. Record*, I chanced upon an article by H. N. Michaelis (1977, **89**: 183-5) in which he admits to being puzzled about the use of the word *testaceous* (pp. 184-5). The point is worth taking up briefly, for his perplexity is wholly understandable and others too may well have felt it.

As Mr. Michaelis says, testaceous should mean (according to dictionaries and derivation) brick-red. But the fact is that, for some reason hard to explain, in entomology at least it almost always denotes a considerably paler hue; this is clear from its use, both in English and in the corresponding Latin forms, by entomological writers from early times down to our own. In describing Coleoptera, for instance — and for that matter, probably, insects of all Orders — it has long been understood to stand for a range of shades basically yellowish with a slight tinge of brown or red-brown, in fact the colour of unpigmented insect cuticle more or less; in any case, by no means brick-red, which is a far deeper hue than what is meant. W. W. Fowler, in his glossary of terms used by coleopterists (1887, *Col. Brit. Isl.* **1**:xiv), remarks under *testaceous* that it is very loosely used, and is applied to almost all yellowish or light reddish-yellow shades. It is doubtless a pity that the original meaning was not adhered to, but great confusion would result from any attempt to correct the established misuse. A. A. ALLEN

ARGYROTAENIA PULCHELLANA HAW. (LEP.: TORTRICIDAE)
ON VITIS VINIFER — In October 1985 a Common Room colleague was enjoying a post-prandial bunch of red grapes picked from a mature vine in his garden in Battersea, London; I noticed that a number of lepidopterous larvae were similarly enjoying the grapes, and was able to secure these, and a further batch from the garden, for rearing. The larvae, which were highly active when disturbed, fed from light webbing around the stalks of the fruits, eating only the skin of the grapes. Fresh vine leaves were refused, even in the absence of fruits. Feeding continued into early November, even though the grapes were, by then, shrivelled and mouldy. The larvae pupated in folds of tissue paper at the base of the container.

Before overwintering, two specimens of the ubiquitous *Cacoecimorpha pronubana* Hubn. emerged, causing a momentary pang of disappointment; however the remaining pupae were placed in a linen bag in the garden, and produced a varied series of *Argyrotaenia pulchellana* in early April 1986.

This species is commonly met on moorland and heathland, where it feeds on a variety of plants including *Erica*, *Calluna*, *Myrica* and *Vaccinium*. Carter, in *Pest Lepidoptera of Europe*, records

“ . . . this highly polyphagous species has recently become a pest of vines and orchard trees in continental Europe. . . ”, although the primary literature source quoted is dated 1966. This record is therefore of interest in respect of the foodplant, locality and mode of larval feeding.

My thanks are due to Mr. K. Tuck of the British Museum (Natural History) for confirming the identification, and especially to my colleague, Bob Barker, for generously donating the entire bunch of grapes, and for collecting further examples from his garden. PAUL SOKOLOFF, 4 Steep Close, Orpington, Kent.

A SPIDER-EATING DRAGONFLY — Dragonflies are obvious and voracious predators; with keen eyesight, powerful jaws and strong flight, they are able hunters. Although I have often watched them chasing insects on the wing, I have never seen or heard tell of the remarkable behaviour I recently observed.

During early May, while on holiday on the Greek Island of Samos, just off the coast of Turkey, I found a blue and black *Aeshna*-like species patrolling a terraced olive grove at about 600 feet. The olive trees were quite old and widely planted, with cypress trees interspersed; the low herbage was lush and insect life abounded. I watched the dragonfly for a few minutes as it darted nimbly about taking flies and beetles out of the air. It carefully followed a particular ‘beat’ around several of the olive and cypress trees, and made the flight about them several times as I watched. But, on one pass beside two closely adjacent cypresses, it veered aside and came to hover about 6 inches in front of a small (4mm) spider sitting in the middle of the orb web it had strung between the two trees. The *Aeshna* then hovered up over the web, and came down on the far side turning through 180 degrees as it did so, again hovering about 6 inches in front of the spider. Then with a sudden movement, it darted forward and snatched the spider off of the web with its jaws before hovering back up and over the undamaged and now empty web. It ate the spider immediately and quickly resumed its manoeuvres up and down the grove. After a further few minutes, as I moved closer to watch, it startled and flew off, not to return.

I had no chance to see anything else like this while I was on the island, as this was the only dragonfly I saw and also the only orb web spider.

Hobby (The prey of British dragonflies, *Trans. Ent. Soc. South Eng.*, 8, Part 2, 1932, pp.65-76) did not record any spider species as prey although he does state ‘exotic species have sometimes been taken with spiders and other wingless arthropods as prey, but there is no information available as to the methods by which these were captured’. Obviously plucking the spider out of its web is one method!

Whatever the palatability of spiders to dragonflies, or the frequency of their encounters, the precise and seemingly calculated movements of this specimen certainly indicate that there is still a lot to be discovered about the hunting and feeding behaviour of dragonflies and other insects. RICHARD A. JONES, Garden Flat, 131 Chadwick Road, Peckham, London SE15 4PY.

XANTHORHOE BIRIVIATA BORKH (LEP.: GEOMETRIDAE) IN KENT — On the night of 30th July 1986 a female *biriviata* came to my garden light trap. This would appear to be the first record of this species in Kent. About 60 ova were obtained before the moth died 3 days later. A brief search in the wood behind my house yielded a few plants of *Impatiens parviflora*, so it seems probable that there is a breeding colony in the vicinity. DENNIS O'KEEFE, 50 Hazelmere Road, Petts Wood, Orpington, Kent.

A FURTHER BRITISH RECORD OF OPSIPHANES TAMARINDI FELDER & FELDER (LEP.: NYMPHALIDAE, BRASSOLINAE). — Further to the records listed by Bristow (1986, *Ent. Rec.* 98: 96-97). I can report a further British specimen of this species. On 2nd February, 1984, an adult male was discovered in a green-grocer's shop in Leicester in a box of bananas originating from Colombia. The specimen is now in the collections at New Walk Museum, Leicester, where it was identified by Miss A. D. Lomas. — D. A. LOTT, Leicestershire Museums Service, 96 New Walk, Leicester.

EGG BATCH SIZE IN THE DUKE OF BURGUNDY — Further to the observation by Adrian Riley (*Ent. Rec.* 97:190) on the size of *lucina* egg batches when he found twelve eggs on one leaf of cowslip (*Primula veris*), I feel this may have been due to inclement weather, especially high winds, when a female is confined to a single leaf rather than being free to randomly distribute her eggs on available plants.

This could explain why, on 8.vi.1986, in a Buckinghamshire locality, my seven year old daughter found a batch of 16 eggs on one leaf, after my wife had found one batch of 5 and another of 3 on the same cowslip plant. I may add that I found two batches of 2 eggs after a long search! This locality has also produced two examples of ab. *leucodes* Lamb. D. STOKES, 97 St. James Park Road, Northampton, NN5 5EU.

SITOCHROA PALEALIS D. & S. (LEP.: PYRALIDAE) IN MID-KENT — On 1st August 1985 a single fresh specimen of this species came to m.v. light at East Malling. This is the first record of *palealis* for this site, and was followed by a second on 21st August 1985.

Now, in 1986, a third pristine *palealis* was captured at m.v. during the night of July 16th, raising the question of whether there might be a colony nearby. The principal larval foodplant, *Daucus carota* (wild carrot) grows locally, in quite high density in parts of the tetrad. *Palealis* is well established in parts of North Kent, along the Thames estuary, and it remains to be seen if the East Malling moths are from a local colony. We would welcome any further records from mid-Kent. D. A. CHAMBERS, 15 Briar Close, Larkfield, Maidstone and M. A. EASTERBROOK, 28 Orchard Grove, Ditton, Maidstone, Kent.

TRIAXOMASIA CAPRIMULGELLA STT. IN S. E. LONDON. — Between about 1977 and 1983 I was accustomed to pay frequent visits in late June and July to a balsam poplar in Maryon-Wilson Park, Charlton, having in its trunk a smallish aperture giving access to a cavity, in which certain interesting Diptera were breeding. (Unfortunately, new growth has for some years been steadily closing up the entrance, thus effectively putting an end to further investigation of the cavity.) From time to time a small, pale-spotted Tineid moth was found at rest on the bark by the hole, on its rim, or just inside it, having obviously bred out of the rotten wood in the interior — which usually contained water to a varying depth. Recently I had the opportunity of showing a specimen to Mr. E. C. Pelham-Clinton, who recognized it as the rare and very local *T. caprimulgella*.

It is possible that this species has not previously been associated with poplar, the usual host trees being beech, oak, and elm (cf. Pelham-Clinton in Emmet, 1979, *Field Guide Smaller Brit. Lep.*: 42). Whether it was taken in this district in former days I do not know, having no data on the Tineidae from 'Woolwich Surveys'. From conversation with Lt.-Col. Emmet I understand that *T. caprimulgella* is very seldom met with anywhere now that it is no longer to be found in Hyde Park, London; indeed it seems likely that the old elms on which the moth used to occur are now gone. A. A. ALLEN.

A LEOPARD IN BRIEF — As a museum biologist I receive my fair share of 'silly' telephone calls: Alleged scorpions which inevitably turn out to be devil's coach-horse beetles *Staphylinus olens*, and 'snakes' which are inevitably old discarded sections of hose-pipe under the hedge! Accordingly I was, at least initially, un-moved by a recent call from a lady who claimed to have found a strange 'thing' in her husband's underpants! As the conversation progressed however, my mind began to positively boggle: "Its long and fat and covered in spots" the caller informed me, and "its doing funny things with little orange balls". A few delicately worded and *very* cautious questions later, I was able to ascertain

that the thing was 'probably a butterfly' which was laying the 'little orange balls' on a pair of underpants hanging on a washing line, (happily, it seems, her husband was not wearing the garment at the time!). Having never seen a two-inch long clothes moth I decided to take my life in my hands and call upon the lady, at Manor Park in East London. With some not inconsiderable trepidation I knocked upon the door and was promptly taken through the house to the rear garden where a pair of white underpants were hanging alone on the washing line some two metres above the ground. To my surprise, (and great relief), there was within the garment a female leopard moth *Zeuzera pyrina* L. busily ovipositing.

Having travelled all the way here I felt moved to adopt a slightly more scientific approach to the situation and eventually persuaded the lady to allow me to borrow the moth and underpants complete for further examination. The garment was manufactured from that type of white material which contains numerous small holes of about 1-2 mm diameter, and the moth was sitting in the crutch with its ovipositor extended some 15mm through one of the holes, waving it around until it made contact with the material beyond whereupon a mass of approximately 200 eggs was laid between two layers of material. In all five such masses were laid, together with two or three smaller clusters of two or three eggs, amounting to a total of 1,023 eggs in all from the arrival of the moth on the cloth in the morning of 9th July, to some time between 1700 and 2000 hours on the next day. During this period, including overnight, the oviposition was a more or less continual process interrupted by longer resting periods. Regrettably, other commitments prevented continual observation.

Presumably the moth mistakenly confused the holes in the cloth as insect holes in a tree branch, although quite why it should do this on a pure white garment hanging two metres above a lawn is a bit of a mystery. True, the method by which any insect selects its correct larval food-plant appears to be incompletely understood: Perhaps oviposition is in any event a random process in this particular species, the law of averages dictating that at least some eggs will be laid in the correct place. It should be noted that the eggs were fertile, those few which were not preserved hatching on 22nd July some eleven or twelve days after laying.

The moth, still laying, was exhibited at the General Meeting of the London Natural History Society on 9th July 1986. COLIN W. PLANT, Passmore Edwards Museum, Romford Road, Stratford, London E15 4LZ.

A WHITE BRIMSTONE MOTH — I would like to record the capture of *Opisthograptis luteolata* ab. *albescens* on 3rd August 1986 in my garden. The moth was photographed before release. R. T. LOWE, 61 Erskine Hill, London, NW11.

BLAIR'S SHOULDER KNOT (LITHOPHANE LEAUTIERI HESPERICA BOURS) IN STAFFORDSHIRE. — Mr. I. O. Jones of Ashley Heath, Staffordshire had an example of this species in his garden actinic trap on October 5th 1985. This is the first Staffordshire record and would appear to be a further northward extension of its range. R. G. WARREN, Wood Ridings, 32 Whitmore Road, Trentham, Stoke-on-Trent, ST4 8AP.

PEACOCK BUTTERFLY OVERWINTERING IN FIFE — I recently examined photographs of a Peacock butterfly, *Inachis io*, taken by Mr. Laurie of Earlsferry, Fife. The butterfly was first noticed by Mr. Laurie in his house last November. It overwintered in the loft of the house. It became active again in early March and was released on the 9th March. This seems to be the first record for this species overwintering in Fife. Surprisingly no other reports for this species were received for Fife in 1985. P. K. KINNEAR, 11 Hillview Road, Balmullo, St. Andrews, Fife KY16 ODE.

Current Literature

The Larger Moths and Butterflies of Essex by A. M. Emmet and G. A. Pyman. Edited by D. Corke. 135pp; 24 half-tone illustrations; numerous maps. Paper. Essex Naturalist No. 8. Essex Field Club 1985. £9.00.

This work is an updated version of Firmin's *A Guide to the Butterflies and Larger Moths of Essex* (1975) and a companion to Emmet's *The Smaller Moths of Essex* (1981). It is most unusual for two county lists to be published within ten years, but this reflects the intense entomological activity in this county. The first 37 pages include interesting essays, by various authors, on aspects of Essex and its habitats. The systematic list occupies the bulk of the work, which concludes with a bibliography. There are also 24 pages of half-tone illustrations, depicting some Essex insects. Each species is cross-referenced to the *Guide*, and for many a simple statement of status is given. For other species there is comment plus individual records for the more noteworthy insects. The 'thumbnail' distribution maps were produced with a BBC micro-computer and are a valuable addition to the work.

The reviewer makes two criticisms: the half-tone illustrations have not reproduced well, and there is probably little point in including black and white photographs of butterflies, given the wealth of good colour material currently available. Secondly,

pp 118-129 comprise additions to the "*smaller moths*" volume which, although most useful, is a little out of place here. Despite these comments this is an excellent local list. Col. Emmet and his colleagues at the Essex Field Club have made a major contribution to our knowledge of the county fauna of Essex. PAS.

The Aurelian or Natural History of English Insects; Namely Moths and Butterflies together with the plants on which they feed by **Moses Harris** introduced by **Robert Mays**. 104pp; 1 plain and 44 coloured plates. 230 x 330 mm; cloth. Newnes Country Life Books 1986. £15.

This classic work by Moses Harris was published in at least seven different issues between 1766 and 1840, and this work appears to be based upon the second issue of the first edition (ca. 1773). The frontespiece is the well known engraving of Harris, with clap net, in a woodland setting. A foreword by J. M. Chalmers-Hunt is followed by a 4 page introduction by Robert Mays. The text of the original work is reproduced in full, although it has been reset in modern typeface. Text relating to the plates is accompanied by informative marginal notes by Mr. Mays. Each of the 44 colour plates occupies a full page, although they are reduced in size from their original 20.

The text makes fascinating reading, although the reviewer would have preferred facsimile reproduction to enhance to 'flavour' of the literary style. Many of the plates in copies of the *Aurelian* are rather gaudy, but those selected here are well coloured and carefully reproduced. The book is nicely bound and reasonably priced. PAS.

The Evolutionary Ecology of Ant-plant Mutualisms by **Andrews J. Beattie**. 182 pp. 12 line drawings. Cambridge University Press, 1985. £15.00. (0 521 25281 4).

This fascinating book covers a wide range of interactions between plants and ants. Ants are almost everywhere (their comparative absence in the undisturbed New Zealand bush is not the least remarkable feature of that strange land) and it is hardly surprising that they have had such an influence on plants and animals. It is in the tropics that the most complicated examples of ant-plant mutualism are found. There some plants produce special cavities in which the ants take up residence and food bodies of various kinds grow on the plant to be harvested by the ants. In return the ants drive off all herbivores, both other insects and grazing mammals. Even wandering naturalists soon learn to leave such plants alone. Of course, other predators are also driven off but presumably they are not needed.

In the temperate zone ant-plant interactions are less complicated. The author discusses the possibility that the attraction of ants to a plant in order to milk honeydew producing aphids or Lycaenid larvae may, on balance, profit the plant by keeping off other herbivores. It is even possible that the ants control the number of aphids. That my broad bean plants entirely fail to profit this way may be due to the unnatural circumstances in which they find themselves.

On the other hand there is no doubt about the advantage to the plant in having its seeds distributed by ants. Many examples are given, although many are of north American origin (like the author) there is a lot in common with this country.

The author also discusses the reasons for the rarity of ant pollination which one might have thought would provide yet another mutualism. — F. M. MURPHEY.

A Field Guide to the Dragonflies of Britain, Europe and North Africa

by J. d'Aguilar, J-L. Dommange and R. Prechai. 336 pp; 40 colour plates; 130 maps; numerous figs. Boards. Collins 1986. £14.95.

This latest field guide, originally issued in French, begins with a 50 page treatment of the general biology of dragonflies, and is followed by a dichotomous key to adults (to genus level) and larvae (to family level). The systematic section deals with general comments on each family, and individual species under the headings of identification, variation, habitat, behaviour and distribution (supported by a map). 13 colour plates depict habitats, with photographs of living insects illustrating emergence, maturation, resting positions, feeding, mating, oviposition, larvae and enemies. 27 colour plates illustrate the individual species.

Although the plates for identification are not quite as clear as those in Hammonds *Dragonflies of Great Britain and Ireland*, this is an excellent guide to the European fauna. The text is particularly informative.

Noctuelles et Géomètres d'Europe by Jules Culot. Volume 1 Noctuelles. 220pp; 38 colour plates. Boards. Reprinted in 1986 by Apollo Books, Lunbyvej-36, DK-5700 Svendborg, Denmark. Price Dkr 690 (or DKr 638 if all four volumes ordered).

Culot's famous work, in four volumes, was originally published in a limited edition between 1909 and 1920. The text, in French, was supported by 151 hand-coloured plates of outstanding quality. Complete sets are very scarce, and command extraordinarily high prices on the second-hand market. For example E. W. Classey Ltd. advertised a signed copy of this work in Autumn 1984 for a price

of £2,000! Apollo Books are reprinting all four volumes over a period of two years — one volume to be issued every six months. The first two volumes cover the Noctuidae (81 plates), and the second two the Geometridae (70 plates).

To review a facsimile reprint of a book is rather difficult. The text is unchanged, and 60 years out of date — although it is still useful for some of the comments on distribution. The plates in the original edition are perhaps amongst the finest ever produced on the European Noctuidae and Geometridae — far superior to those in Kirby's *European Butterflies & Moths* or the modern work by Forster & Wohlfahrt *Die Schmetterlinge Mitteleuropas*. This reprint must therefore be judged on the accuracy of reproduction, and the reviewer is most grateful to Bernard Skinner for the generous loan of his personal copy of Volume 1. There are some minor differences between the reprints and the original : only one of the two title pages is reproduced, and Plate A (page 221) has been omitted — this was a line drawing of a wing showing markings etc. The legend to the plates is printed opposite the plate whereas in the original it was overprinted on a tissue insert. The original plates were executed on cream paper and the white paper used in the reprint makes some of the figures a little harsh. The reproductions are fractionally darker than the originals (although there was some variation between individual copies). On the whole the colour reproduction is remarkably accurate, and the publisher deserves congratulations on this achievement.

Although not a cheap book, it is highly recommended for those who appreciate good quality artwork and, as it contains the most accurate illustrations of European moths currently available, an identification guide. PAS.

The Butterflies of Suffolk by **Howard Mendel** and **Steven Piotrowski**. 128pp; numerous colour photographs and maps. Boards. Suffolk Naturalists Trust (c/o Ipswich Museum, Suffolk) 1986. £10.

This book is a welcome addition to the growing number of 'County' publications on insects. Suffolk is described in terms of its climate, geology, butterfly habitats, recording history and the conservation measures currently undertaken; a summary of the status of Suffolk butterflies precedes a detailed account of each of the species recorded in the county. Although individual records are not cited, the status of each species is outlined with an informative narrative. A tetrad map and, for most species, a colour photograph of a living insect accompany the description, and a bibliography and index complete the work.

This is a well produced book — the text is readable and interesting and the colour work very good.

Schmetterlinge, Kafer und andere insekten by Maria Sibylla Merian.
2 vols. in slip case. Vol. I 471pp; Vol. II 120 plates (boxed). 240 x 320mm. Limited ed. of 1800 numbered copies. VCH Verlagsgesellschaft (Pappellallee 3, D-6940 Weinham, Germany). DM 1180.

Maria Merian (1647-1717) was a remarkable entomological and botanical artist best known, perhaps, for her master work *Metamorphosis Insectorum Surinamensium*. An English facsimile of her work *The wondrous transformations of caterpillars*, with an introduction by W. T. Stearn, was published in 1978. Amongst the papers of the Academy of Sciences of the USSR in Leningrad is an extensive unpublished volume of text with watercolour-and-gouache illustrations of insects, painted on parchment, probably produced between 1647 and 1713. The current work provides a bibliographical and entomological analysis of this volume, together with a colour facsimile of the paintings.

Volume I, with text in English, French, German and Russian provides the detailed historical perspective and analysis. A facsimile of the original text (handwritten by Merian) is provided, together with a German translation. Volume II comprises the plates: 120 individual card sheets each printed with a colour facsimile depicting, generally, between 1 and 3 watercolours as they appeared in the Leningrad volume. Each sheet is wrapped in tissue overprinted with the identity of the animal figured (mainly Lepidoptera and Coleoptera, but including the odd snail, spider etc.) and the cross-reference to the text. The plates are boxed in a "book" bound to match Volume I.

The history of Merian and the bibliographical analysis is both scholarly and fascinating. The plates are, however, the outstanding feature of this production. The detail of her illustrations is magnificent, and the publishers have been meticulous in their reproduction, making them irresistible to the connoisseur of entomological illustrations. Both volumes are handsomely bound and protected by a stout slip case. PAS.

W. G. St. John (1908-1986)

It is with sorrow that we record the death of Bill St. John, of Forest Hill, at the age of 77. For many years the deceased kept a record of his captures of macrolepidoptera from his garden in West Kent (VC 16). Amongst the more interesting of these was a Camberwell beauty (*Nymphalis antiopa* L.) on a dahlia on 19th September 1974. J.M.C.H.

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Readers are respectfully advised that the publication of material in this Journal does not imply that the views and opinions expressed therein are shared by the Editor and publisher.

SPECIAL NOTICE. — The Editor would be willing to consider the purchase of a limited number of certain back issues.

SPECIAL INDEX

COMPILED BY S. N. A. JACOBS (LEPIDOPTERA)
AND A. A. ALLEN (OTHER ORDERS)

Newly described taxa (species, genera etc.) are distinguished by bold type. Taxa new to Britain or newly recognised as British are denoted by an asterisk.

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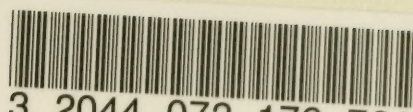
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